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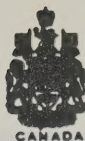
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Canada. Civil aviation branch
Information circular

Government
Publications



INFORMATION CIRCULAR



Personnel Licensing

0/22/63
15th August

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DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES (Superseding Information Circulars 0/16/60 and 0/28/61)

1. INTRODUCTION - An application for a Licence shall be submitted to the appropriate Regional Director, Air Services, Department of Transport on a form furnished by the Department.
2. GENERAL CONDITIONS - These conditions apply to the issue of all licences.
 - (a) CITIZENSHIP - An applicant shall be:
 - i) a Canadian Citizen;
 - ii) a person lawfully admitted to Canada for permanent residence who since being so admitted has been ordinarily resident in Canada for a period of not more than six years; or
 - iii) a citizen or subject of a contracting state that grants like privileges to Canadian citizens on equal terms and conditions as citizens or subjects of that state.
 - (b) EDUCATION - An applicant must be able to read the examination questions and to write his answers without assistance.
 - (c) TESTS AND EXAMINATIONS - All tests and examinations for issuance of a licence shall be completed during a twelve (12) month period.
3. DETAILED REQUIREMENTS for issue of licences may be found in the attached appendices:-
 - Appendix "A", The Glider Pilot Licence
 - Appendix "B", The Private Pilot Licence
 - Appendix "C", The Commercial Pilot Licence
 - Appendix "D", The Senior Commercial Pilot Licence
 - Appendix "E", The Airline Transport Pilot Licence
 - Appendix "F", The Flight Navigator Licence
 - Appendix "G", The Flight Engineer Licence
4. ADMISSION TO WRITTEN EXAMINATIONS
 - (a) Applicants for Licences will be admitted to the required examinations or tests as soon as their applications have been approved.
 - (b) An application for a pilot licence may be approved upon submission of satisfactory proof that not less than 75 per cent of the total flying experience required for that licence has been completed.
 - (c) If an applicant is enrolled on a Department of Transport Approved Pilot Course he may sit for the written examinations if he has completed:
 - i) a minimum of ten (10) hours flight time on the private pilot course;
 - ii) a minimum of one hundred (100) hours flight time on the commercial pilot course.

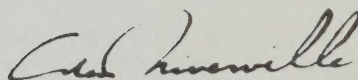
- (d) An applicant, who fails an examination, may not be re-examined on the same subject at intervals of less than thirty (30) days and if the applicant is enrolled on a Department of Transport Approved Pilot Course the club or school concerned shall submit, in writing, evidence that the applicant has been given additional instruction.
- (e) When the initial attempt of any written examination results in a failure a higher pass mark may be required on subsequent attempts.

5. ADMISSION TO FLIGHT TEST

- (a) An applicant for a Private Pilot Licence may not undergo the required flight test unless he has completed a minimum of:
 - i) thirty-five (35) hours of flight time, or
 - ii) twenty-five (25) hours of flight time if he is enrolled on the approved course of Private Pilot training.
- (b) An applicant for a Commercial Pilot Licence may not undergo the required flight test unless he has a certificate from a qualified flying instructor certifying that he is considered to meet the competency standard for issue of the Commercial Pilot Licence and he has completed a minimum of:
 - i) one hundred and seventy-five (175) hours of flight time, or
 - ii) one hundred and twenty-five (125) hours of flight time if he is enrolled on the approved course of Commercial Pilot training.

6. FLIGHT TESTS

- (a) A qualified flying instructor may conduct the private pilot flight test in a category of aircraft for which he holds a valid instructor rating providing:
 - i) he has more than two hundred (200) hours of instructing experience on the category of aircraft to be used for the test, and
 - ii) if the test is to be conducted in an aeroplane he holds a Class I or Class II rating.
- (b) A commercial pilot flight test will be conducted by an Inspector, Civil Aviation designated for that purpose.
- (c) Applicants who fail a flight test shall receive further flight instruction prior to re-test.



A. de Niverville,
Assistant Deputy Minister, Air.

APPENDIX "A"

THE GLIDER PILOT LICENCE

1. AGE - An applicant shall have reached his sixteenth (16th) birthday.
2. PHYSICAL FITNESS - An applicant shall certify that to the best of his knowledge he has no physical defects which might render him unable to pilot a glider. An applicant who by examination is determined to be unfit for issue of a private pilot licence shall not be considered fit for issue of a licence.
3. KNOWLEDGE - An applicant shall pass a written examination based on the following subjects as related to gliding:
 - (a) Air Regulations, Air Navigation Orders, Air Traffic Rules, Information Circulars and Notams;
 - (b) Theory of Flight, Glider Operations;
 - (c) Elementary Principles of Meteorology;
 - (d) Aeronautical Charts; and
 - (e) Instruments.
4. EXPERIENCE - An applicant shall have completed not less than:
 - (a) three (3) hours of flight time in gliders; and
 - (b) two (2) hours of solo flight time in gliders which shall include:
 - i) 20 take-offs and landings, and
 - ii) 10 flights that include 360° turns to the right and left.
5. SKILL - An applicant shall demonstrate his familiarity with, and his ability to perform in a satisfactory manner, both normal and emergency flight manoeuvres, appropriate to the privileges granted by the licence.
An applicant's certified experience and a recommendation from a qualified glider instructor may be accepted as proof of skill.
6. PRIVILEGES - The holder of a Glider Pilot Licence may act as pilot-in-command of:
 - (a) any glider not carrying passengers;
 - (b) any glider endorsed on his licence, carrying passengers provided he uses a type of launch which he has previously used on at least three solo flights; and
 - i) he is in possession of a certified log book to prove he has completed a minimum of ten (10) hours of solo flying in gliders; or
 - ii) he is the holder of any type of valid Canadian pilot licence for powered aircraft.

NOTE: Glider Pilot Licences are normally endorsed "valid for all types of gliders up to 1,250 lbs. gross allowable weight for take-off."

APPENDIX "B"

THE PRIVATE PILOT LICENCE

1. AGE - An applicant shall have reached his seventeenth (17th) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the twenty-four (24) months preceding the date of issue of the licence if the applicant is under 40 years of age, or, within the twelve (12) months preceding the date of issue if the applicant is forty (40) years of age or over.
3. KNOWLEDGE - An applicant shall pass a written examination on:
 - (a) The Air Regulations, Air Navigation Orders, Air Traffic Rules, Information Circulars and Notams;
 - (b) Theory of Flight;
 - (c) Engines, Airframes;
 - (d) Aircraft Operating Limitations, Air Safety and Emergency Procedures;
 - (e) Meteorology;
 - (f) Navigation; and
 - (g) Instruments.

The minimum assessment for a pass is 60 percent.

4. EXPERIENCE - The following flight time shall be completed on the same category of aircraft (i.e. Aeroplane, Gyroplane, or Helicopter) and shall include not less than:
 - (a) twelve (12) hours dual flight time;
 - (b) twelve (12) hours solo flight time;
 - (c) two (2) hours of dual and three (3) hours of solo cross-country flight time including a solo triangular flight of not less than 120 nautical miles with two full stop landings at points other than the point of departure; and
 - (d) either
 - i) forty-five (45) hours of flight time, or
 - ii) thirty-five (35) hours of flight time if he has satisfactorily completed the Department of Transport Approved Course of Private Pilot Training.

- 4.1 EXPERIENCE - SINGLE PLACE GYROPLANES - When an applicant acquires his flight experience on a single place ultra-light gyroplane, the dual requirement of 4 (a) for a licence in the GYROPLANE CATEGORY may be waived; provided that in lieu thereof:
 - (a) a recognized course of training for single place ultra-light gyroplanes is followed, and
 - (b) the applicant completes six (6) hours dual flight instruction on an aeroplane, gyroplane or a helicopter covering airmanship and navigation. The six (6) hours so acquired shall be in addition to the forty-five (45) hours required by 4 (d) (i).

NOTE: Gyroplane flight experience means flight experience acquired on a power-driven gyroplane and does not include experience acquired in towed flight.

5. SKILL - An applicant shall demonstrate in flight and on the ground his familiarity with, and his ability to perform, both normal and emergency manoeuvres appropriate to the category and class of aircraft used in the test and with a degree of competency appropriate to the privileges granted by the licence.
6. LICENCE RENEWAL CERTIFICATE - The holder of a private pilot licence may only exercise the privileges attaching to such licence when it is accompanied by a valid Licence Renewal Certificate. A Licence Renewal Certificate may be issued to a licence holder on receipt of a satisfactory medical examination report conducted by a Department of Transport designated medical examiner and such additional information as may be required from time to time. The normal renewal period for a licence holder under forty (40) years of age is twenty-four (24) months and for a licence holder forty (40) years of age or over twelve (12) months, but may be restricted to a shorter period. When the renewal period commences during the twelve (12) months preceding a licence holder's fortieth (40th) birthday the Licence Renewal Certificate will be issued valid to his forty-first (41st) birthday.
7. PRIVILEGES - Attaching to Private Pilot Licences may be found in Air Navigation Order, Series IV, No. 2.
8. EXPERIENCE - NIGHT ENDORSEMENT - An applicant for a night endorsement shall have completed not less than:
 - (a) two (2) hours of dual night flight;
 - (b) five (5) hours of solo night flight including not less than ten (10) take-offs and landings;
 - (c) ten (10) hours of night flight;
 - (d) five (5) hours of dual instrument flight time two (2) hours of which may be obtained on flight simulators.

NOTE: The dual instrument flight ^{time} ~~instruction~~ shall be obtained from the holder of a valid instructor rating and shall be in addition to the flight time required by (a) above.

APPENDIX "C"

THE COMMERCIAL PILOT LICENCE

1. AGE - An applicant shall have reached his eighteenth (18th) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the twelve (12) months preceding the date of issue of the licence if the applicant is under forty (40) years of age, or, within the six (6) months preceding the date of issue if the applicant is forty (40) years of age or over. A satisfactory electrocardiogram tracing shall form part of the required examination.
3. KNOWLEDGE - An applicant shall pass written examinations covering the following subjects:
 - (a) Air Regulations;
 - (b) Air Traffic Control practices and procedures;
 - (c) Aviation Meteorology, including analysis of weather maps and of meteorological reports;
 - (d) Practical Air Navigation, including use of aeronautical charts;
 - (e) Navigational Instruments and aids to flight under Visual Flight Rules (VFR);
 - (f) Radio Aids to Navigation, including communication procedures;
 - (g) Theory of flight and aircraft operating limitations;
 - (h) Aircraft equipment and installation;
 - (i) Airframe and powerplant maintenance.

The subject material is covered in three examinations:

- i) Air Regulations, Air Traffic Rules and Procedures;
- ii) Airmanship and Meteorology;
- iii) Flight Planning, Navigation and Radio Aids.

The minimum assessment for a pass is 60% on each examination.

4. EXPERIENCE AEROPLANES - An applicant for a licence with an AEROPLANE CATEGORY RATING shall have completed not less than:
 - (a) one hundred (100) hours flight time as pilot-in-command;
 - (b) twenty (20) hours of cross-country flight time, as pilot-in-command; including one flight of not less than 300 nautical miles in the course of which not less than two full stop landings at points other than the point of departure shall be made;
 - (c) ten (10) hours of night flight time of which five (5) hours may be dual flight time, including not less than ten (10) take-offs and landings as pilot-in-command;

NOTE: When an applicant does not have the required night flying experience a restricted licence may be issued valid for day flying only.

- (d) ten (10) hours of dual instrument flight time, five (5) hours of which may be obtained on flight simulators;

NOTE: The dual instrument flight instruction shall be obtained from the holder of a valid instructor rating and shall be in addition to the flight time required by (c) above; and

(e) either:

- i) two hundred (200) hours of flight time, or
- ii) one hundred and fifty (150) hours of flight time, if he has satisfactorily completed the "Department of Transport Approved Course of Commercial Pilot Training", on aeroplanes.

4.1 EXPERIENCE HELICOPTERS - An applicant for a licence with a HELICOPTER CATEGORY RATING shall have completed not less than:

- (a) seventy (70) hours flight time as pilot-in-command;
- (b) ten (10) hours of cross-country flight time, as pilot-in-command; and
- (c) a minimum of two hundred (200) hours of flight time on helicopters.

5. SKILL AEROPLANES - An applicant for a licence with an AEROPLANE CATEGORY RATING shall demonstrate his ability to perform both normal and emergency flight manoeuvres appropriate to the privileges granted by the licence, including the ability to fly and manoeuvre multi-engine aircraft with each engine in turn completely throttled down if a multi-engine rating is desired. The applicant shall also satisfy the examining officer as to his ability to recover from stalls, including powered stalls.

5.1 SKILL HELICOPTERS - An applicant for a licence with a HELICOPTER CATEGORY RATING shall demonstrate his ability to pilot helicopters satisfactorily in all normal manoeuvres on the ground, in hover and in flight, including emergency manoeuvres and autorotative approaches.

6. LICENCE RENEWAL CERTIFICATE - The holder of a commercial pilot licence may only exercise the privileges attaching to such licence when it is accompanied by a valid Licence Renewal Certificate. A Licence Renewal Certificate may be issued to a licence holder on receipt of a satisfactory medical examination report conducted by a Department of Transport designated medical examiner and such additional information as may be required from time to time. The normal renewal period for a licence holder under forty (40) years of age is twelve (12) months and for a licence holder forty (40) years of age or over six (6) months. When the renewal period commences during the six (6) months preceding a licence holder's fortieth birthday the Licence Renewal Certificate will be issued valid until six (6) months following his fortieth (40th) birthday. A satisfactory electrocardiogram tracing shall form part of the medical report at five year intervals up to the age of forty and at two year intervals thereafter. The electrocardiogram (ECG) due date will be entered on the Licence Renewal Certificate for the information of the licence holder. Unless the medical examination report for renewal of the certificate includes a satisfactory electrocardiogram tracing, renewal will not be effected beyond the ECG due date.

7. PRIVILEGES - Attaching to Commercial Pilot Licences may be found in Air Navigation Order, Series IV, No. 3.

APPENDIX "D"

THE SENIOR COMMERCIAL PILOT LICENCE

1. AGE - An applicant shall have reached his twenty-first (21st) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the six (6) months preceding the date of issue of the licence. A satisfactory electrocardiogram tracing shall form part of the required examination.
3. KNOWLEDGE - An applicant shall pass written examinations covering the following subjects:
 - (a) The rules and regulations governing civil aviation which are pertinent to the operation of transport aircraft;
 - (b) The basic principles of air navigation including the use of formulae, instruments, and other navigational aids which are deemed necessary for the navigation of aircraft;
 - (c) The general system of weather collection and dissemination;
 - (d) Weather map, weather forecast, and weather abbreviations, symbols and nomenclature;
 - (e) Elementary meteorology including:
 - pressure systems;
 - the association of pressure systems with fronts, cloud forms and icing conditions;
 - the movement of upper winds and its effect on aircraft operation;
 - (f) Weather service circulars and instructions for air route meteorological service which are pertinent to aircraft operation;
 - (g) Radio communication procedure as applied to aircraft operation;
 - (h) Basic principles of loading and weight distribution and their effect on flight characteristics;
 - (i) Any other knowledge required for the instrument rating, if application is made for the instrument rating.

The subject material is covered in six examinations:

- i) Air Regulations, Air Traffic Rules and Procedures;
- ii) Meteorology;
- iii) Navigation and Instruments;
- iv) Navigation, Flight Planning;
- v) Flight Navigation, Radio Aids;
- vi) Flight Operations

The minimum assessment for a pass is 60 per cent on each examination.

4. EXPERIENCE AEROPLANES - An applicant for a licence in the AEROPLANE CATEGORY shall have completed not less than:
 - (a) two hundred (200) hours flight time as pilot-in-command;
 - (b) twenty-five (25) hours of night flight time as pilot-in-command; of which ten (10) hours shall be cross country flight time;
 - (c) twenty (20) hours of instrument flight time, of which ten (10) hours may be obtained on flight simulators; and
 - (d) seven hundred (700) hours of flight time of which five hundred and twenty-five (525) hours shall have been acquired on aeroplanes.

5. SKILL - An applicant shall demonstrate his ability to perform both normal and emergency flight manoeuvres appropriate to the category, class and type of aircraft used in the test and with a degree of competency appropriate to the privileges granted by the licence.
6. LICENCE RENEWAL CERTIFICATE - The holder of a senior commercial pilot licence may only exercise the privileges attaching to such licence when it is accompanied by a valid Licence Renewal Certificate. A Licence Renewal Certificate may be issued to a licence holder on receipt of a satisfactory medical examination report conducted by a Department of Transport designated medical examiner and such additional information as may be required from time to time. The normal renewal period is six (6) months. A satisfactory electrocardiogram tracing shall form part of the medical report at five (5) year intervals up to the age of forty (40) and at two (2) year intervals thereafter. The electrocardiogram (ECG) due date will be entered on the Licence Renewal Certificate for the information of the licence holder. Unless the medical examination report for renewal of the certificate includes a satisfactory electrocardiogram tracing, renewal will not be effected beyond the ECG due date.
7. PRIVILEGES - Attaching to Senior Commercial Pilot Licences may be found in Air Navigation Order, Series IV, No. 4.

APPENDIX "E"

THE AIRLINE TRANSPORT PILOT LICENCE

1. AGE - An applicant shall have reached his twenty-first (21st) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the six (6) months preceding the date of issue of the licence. A satisfactory electrocardiogram tracing shall form part of the required examination.
3. KNOWLEDGE - An applicant shall pass written examinations covering the following subjects:
 - (a) the rules and regulations governing civil aviation which are pertinent to the operation of transport aircraft;
 - (b) the basic principles of air navigation including the use of formulae, instruments, and other navigational aids which are deemed necessary for the navigation of aircraft by instruments,
 - (c) the general system of weather collection and dissemination;
 - (d) weather map, weather forecast, and weather abbreviations, symbols and nomenclature;
 - (e) elementary meteorology including:
 - pressure systems;
 - the association of pressure systems with fronts, cloud forms and icing conditions;
 - the movement of upper winds and its effect on aircraft operation;
 - (f) weather service circulars and instructions for air route meteorological service which are pertinent to aircraft operation;
 - (g) radio communication procedure as applied to aircraft operation;
 - (h) basic principles of loading and weight distribution and their effect on flight characteristics;
 - (i) the instrument rating.

The subject material is covered in seven examinations:

- i) Air Regulations, Air Traffic Rules and Procedures;
- ii) Meteorology;
- iii) Navigation and Instruments;
- iv) Navigation, Flight Planning;
- v) Flight Navigation, Radio Aids;
- vi) Flight Operations;
- vii) Instrument Rating.

The minimum assessment for a pass is 70 per cent on each examination.

4. EXPERIENCE AEROPLANES - An applicant for a licence in the AEROPLANE CATEGORY shall have completed not less than:
 - (a) two hundred and fifty (250) hours flight time as pilot-in-command;
 - (b) one hundred (100) hours of cross-country flight time as pilot-in-command;
 - (c) one hundred (100) hours of night flight as pilot-in-command or as co-pilot;
 - (d) twenty-five (25) hours of night cross-country flight time as pilot-in-command;
 - (e) two hundred (200) hours of cross-country flight time as co-pilot in an aircraft required to be operated by a co-pilot or, in lieu thereof, one hundred (100) additional hours of cross-country flight time as pilot-in-command;

- (f) seventy-five (75) hours of instrument flight time of which twenty-five (25) hours may be obtained on flight simulators; and
- (g) twelve hundred (1200) hours of flight time of which nine hundred (900) hours shall have been acquired on aeroplanes.

5. SKILL AEROPLANES - An applicant for a licence with an AEROPLANE CATEGORY RATING shall demonstrate his ability:

- (a) to pilot aircraft satisfactorily in all manoeuvres used in normal flight;
- (b) to execute emergency manoeuvres which may include simulated forced landings and recovery from stalls entered from both level and steeply banked attitudes;
- (c) to operate multi-engine aircraft at authorized maximum landing weight with one engine inoperative, if a rating on such aircraft is sought;
- (d) to execute all normal manoeuvres solely by reference to instruments, including stalls, spirals and a turn of not less than 720 degrees in a banked attitude of not less than 45 degrees;
- (e) to operate multi-engine aircraft solely by reference to instruments, at authorized maximum landing weight with one engine inoperative, if a rating on such aircraft is sought;
- (f) to interpret International Morse Code radio signals and while piloting aircraft under actual or simulated instrument flight conditions, to conduct an orientation and approach procedures by the use of radio and to give any other demonstration of skill required for the instrument rating;
- (g) to execute any other manoeuvres which may be essential to establish his competency;
- (h) to conduct tests specified in (b), (c) and (e) above, in an aircraft of the class for which a rating is sought and where the rating is sought for an aircraft having a gross weight exceeding 12,500 pounds, in the type of aircraft for which a rating is sought.

Any manoeuvre required during the course of the tests mentioned above may be modified or eliminated if such manoeuvre is inadvisable in the type of aircraft used in the tests.

6. LICENCE RENEWAL CERTIFICATE - The holder of an airline transport pilot licence may only exercise the privileges attaching to such licence when it is accompanied by a valid Licence Renewal Certificate. A Licence Renewal Certificate may be issued to a licence holder on receipt of a satisfactory medical examination report conducted by a Department of Transport designated medical examiner and such additional information as may be required from time to time. The normal renewal period is six (6) months. A satisfactory electrocardiogram tracing shall form part of the medical report at five (5) year intervals up to the age of forty (40) and at two (2) year intervals thereafter. The electrocardiogram (ECG) due date will be entered on the Licence Renewal Certificate for the information of the licence holder. Unless the medical examination report for renewal of the certificate includes a satisfactory electrocardiogram tracing, renewal will not be effected beyond the ECG due date.

7. PRIVILEGES - Attaching to Airline Transport Pilot Licences may be found in Air Navigation Order, Series IV, No. 5.

APPENDIX "F"

THE FLIGHT NAVIGATOR LICENCE

1. AGE - An applicant shall have reached his twenty-first (21st) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the twelve (12) months preceding the date of issue of the licence.
3. KNOWLEDGE - An applicant shall pass written examinations covering the following subjects:
 - (a) the Air Regulations;
 - (b) the form of the earth and the celestial sphere, including:- definitions, units and formulae used in air navigation; the practical properties and use of aeronautical charts; the movement of heavenly bodies and their selection and identification for the purpose of observation and reduction of sights;
 - (c) flight navigation, including: - air navigation facilities and procedures in current use; pre-flight planning and en-route flight planning; the keeping of navigation logs; navigation by dead-reckoning; navigation by the use of aeronautical charts, navigation by radio; and navigation by celestial observations;
 - (d) the calibration and use of instruments and aircraft equipment used in flight navigation, including:- their principles of operation; the errors to which they are subject and, where applicable, the methods of correction;

The examination in this subject may include practical tests in the use and adjustment of navigation equipment and the interpretation of radio aid identification signals.

- (e) the meteorological elements and their general distribution and seasonal variations; meteorological phenomena of concern to air navigation; meteorological observations and the system of issue of meteorological reports for aviation; the construction and analysis of synoptic charts; the weather associated with pressure systems and fronts and the principles of forecasting.

The subject material is covered in eight examinations:

- i) Air Regulations; Air Traffic Rules and Procedures;
- ii) Form of the Earth, Aeronautical Charts;
- iii) Meteorology;
- iv) Flight Navigation I;
- v) Flight Navigation II (Plotting);
- vi) Celestial Navigation;
- vii) Navigation Instruments, Magnetism and Compass;
- viii) Radio Aids and Pressure Pattern Flight.

4. EXPERIENCE - An applicant shall have completed not less than:
 - (a) two-hundred (200) hours of air navigation experience in aircraft engaged in cross-country flights;
 - (b) fifty (50) hours of air navigation experience in aircraft engaged in cross-country by night;
 - (c) twenty-five (25) hours of the required navigator flight time must have been obtained during the six (6) months immediately preceding application for a licence;
 - (d) twenty-five (25) fixes by day and twenty-five (25) fixes by night using celestial observations in conjunction with radio, altimetry or other aids to air navigation which he has applied to the navigation of the aircraft;

- NOTE: (1) When an applicant has had experience as a pilot engaged in scheduled air transportation, fifty per cent of the flight time so acquired may be credited toward one-half of the two hundred hours required in (a);
- (2) An applicant who satisfactorily completes a course of training for the Flight Navigator Licence approved as such by the Department of Transport shall be deemed to have met the experience requirements of sub-paragraph (a) and (b) above.

5. SKILL - An applicant shall demonstrate in flight by day and by night his competency in navigation of aircraft by dead-reckoning, celestial and other navigational methods.
6. PRIVILEGES - The holder of a Flight Navigator Licence may act as navigator in any aircraft, provided he has familiarized himself with all information pertinent to each flight in which he acts as flight navigator.

APPENDIX "G"

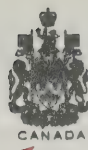
THE FLIGHT ENGINEER LICENCE

1. AGE - An applicant shall have reached his twenty-first (21st) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the twelve (12) months preceding the date of issue of the licence.
3. KNOWLEDGE - An applicant shall pass written examinations covering the following subjects:
 - (a) Air Regulations especially those relating to his duties as a flight engineer;
 - (b) elementary theory of flight and aerodynamics;
 - (c) general principles of maintenance and functioning of airframe, powerplants and installed equipment in aircraft normally requiring a flight engineer;
 - (d) methods of effecting, in flight, minor repairs, adjustments and replacements;
 - (e) aircraft performance in respect of speed limitations and action to be taken in the event of a failure or a partial failure of one or more powerplants;
 - (f) flight planning based on loading, centre of gravity computations, performance, fuel consumption, engine power and efficiency tables and curves; control of power output and the effect thereon of varying meteorological conditions.

The subject material is covered in three examinations:

 - i) Air Regulations, Air Traffic Rules and Procedures;
 - ii) Principles of Aircraft Maintenance and Theory of Flight;
 - iii) Aircraft Performance and Flight Planning.
4. EXPERIENCE - An applicant shall have completed not less than fifty (50) hours of flight training or the equivalent thereof, in the performance of the duties of a flight engineer.
5. SKILL - An applicant shall demonstrate, or have demonstrated in flight his competency in the duties of a flight engineer including competency in emergency procedures.
6. PRIVILEGES - The holder of a valid flight engineer licence may act in the capacity of flight engineer in any type of aircraft entered on his licence.

INFORMATION CIRCULAR



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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Carriage of Explosives and Other Dangerous Articles and Substances on Board Aircraft

Section 800 of the Air Regulations prohibits the carriage on board aircraft of explosives and other dangerous articles or substances unless authorization is granted by the Minister of Transport.

However, certain inherently dangerous articles and substances can be rendered safe by proper packaging and the taking of all reasonable precautions. Such articles and substances are deemed acceptable for air transportation and may be carried on board aircraft without authorization.

The articles and substances listed in both the IATA Regulations Relating to the Carriage of Restricted Articles by Air and the Official Air Transport Restricted Articles Tariff are deemed to fall within the above category and may therefore be carried without authorization on board aircraft provided the conditions of carriage set forth in these publications are complied with.

In addition, it has been agreed that more flexibility can be used in the packaging and in the precautions and measures used to render certain articles safe than are specified in the aforementioned documents and those articles and substances described in Appendix II of this Circular can be rendered safe and carried on board aircraft operating within Canada provided the conditions set forth in Appendix I are complied with.

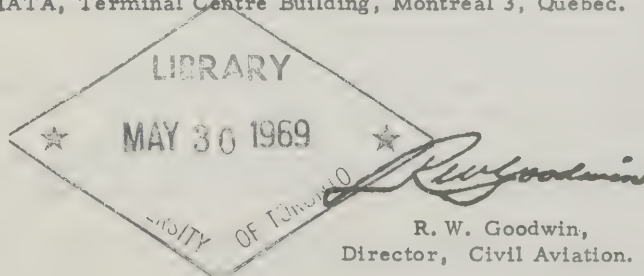
It should be emphasized that, in view of the handling techniques involved, good operating practice would dictate compliance with the IATA Regulations Relating to the Carriage of Restricted Articles by Air or the Official Air Transport Restricted Articles Tariff for Class I scheduled operations.

It should also be emphasized that an operator who intends to carry any dangerous article or substance not included in or not in compliance with the conditions of carriage specified in the referenced publications or in the Appendices to this Circular must obtain authorization to do so.

Applications for this authority should be addressed to the appropriate Regional Director, Air Services, and should include a description of the article or substance, the amounts to be carried and the point of take-off and landing.

Copies of the Official Air Transport Restricted Tariff are obtainable on a yearly subscription basis on application to J. Aniello, Agent, Air Traffic Conference of America, 1000 Connecticut Avenue, N. 1., Washington 6, D.C.

Copies of the International Air Transport Association Regulations Relating to the Carriage of Restricted Articles by Air are also obtainable on a yearly subscription basis and may be obtained from H. D. Reynolds, Traffic Director, IATA, Terminal Centre Building, Montreal 3, Quebec.



APPENDIX I

GENERAL:

1. In authorizing the carriage of these restricted articles, the carrier and shipper are in no way relieved of the responsibility to ascertain the characteristics of the articles and to take necessary measures to ensure they are rendered safe.

CONTAINERS:

2. Containers in contact with the article shall be resistant to it and shall not incorporate materials which may react dangerously, form hazardous compounds or lead to weakening of the container.

3. Containers shall be of such materials and construction as to prevent escape or damage of the articles caused by changes in temperatures, humidity and altitude.

4. Containers which are breakable or puncturable such as glass, earthenware, plastic or hard rubber, shall be packed in strong outside containers, suitably cushioned.

5. Containers shall be capable of withstanding all conditions normally incident to flight.

6. Containers of liquids must not be entirely filled. Sufficient space must be left vacant to prevent leakage or distortion of containers.

7. Containers shall be secured against possible shifting in flight.

COMPRESSED GASES:

8. Flammable and non-flammable compressed gases may be carried with passengers providing they are contained in appropriate cylinders manufactured especially for the purpose of containing and transporting the particular compressed gas and pressures shall not exceed the maximum working or service pressures permitted for such cylinders. Where cylinders are designed to be fitted with valve protection caps, they shall be installed. If valves and fittings are not protected from injury by caps, the cylinders must be securely packed in strong wooden boxes.

COMBUSTION ENGINES:

9. The fuel systems of combustion engines shall be dry and free of fumes or, if conditions render such action impracticable, the engines shall be stored in such a manner to prevent spillage of gasoline. When such combustion engines are carried in the cabin of an aircraft, smoking will not be permitted and adequate cabin ventilation will be maintained.

EXPLOSIVES:

10. Commercial high explosives (dynamite) shall be packaged in fresh, unopened and unstained boxes as received from the manufacturer.

11. Blasting caps, non-electric, shall be packaged in a double container consisting of an inner package containing the detonators in their original unopened protective container as received from the manufacturer and separated from the outer container by at least six inches of dry sawdust or other inert material.

12. Blasting caps, electric, shall be packaged in accordance with paragraph 11 above except that the inner container shall be fully shielded by complete wrapping in metal foil. Normal household metal foils are considered adequate for this purpose.

13. If both commercial high explosives (dynamite) and blasting caps are carried on an aircraft, they shall be separated as far apart as is practicable.

14. Containers and boxes containing high explosives or detonators shall be clearly marked as to the nature of the contents and all personnel concerned with handling shall be notified.

15. Commercial high explosives and/or detonators shall not be carried with passengers except that the owner of such goods or his accredited representative may be carried.

APPENDIX I (Cont'd)

EMPTY DRUMS AND CYLINDERS:

16. Empty drums which contained flammable liquids shall not be carried with passengers except that the owner of the drums or his accredited representative may be carried. Such drums shall be carried upright with bungs in place but not tightened.

17. Empty cylinders which contained compressed gases may be carried with passengers providing the cylinders have not been damaged and the shut off valves are closed tightly.

LOADING AND HANDLING:

18. All persons involved in loading, off-loading or handling restricted articles shall be advised regarding the characteristics of the materials. Handling shall be performed with the greatest of care; articles shall be stowed so as to prevent leakage, spillage or damage and so positioned that adequate inspection can be maintained at all times.

19. When flammable or explosive articles are to be carried, the aircraft shall be loaded and off-loaded at a safe distance from buildings or other aircraft.

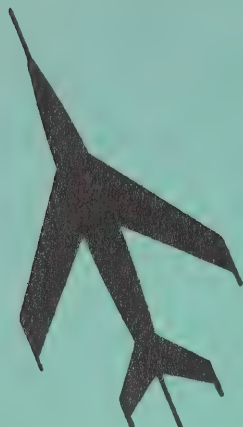
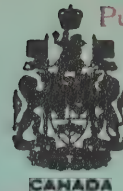
IN FLIGHT PRECAUTIONS:

20. Carriers shall ensure that smoking is not permitted in the aircraft when explosives, flammable articles or fumes are present. Adequate cabin ventilation shall be maintained.

21. Flights shall be conducted in accordance with the highest standard of airmanship.

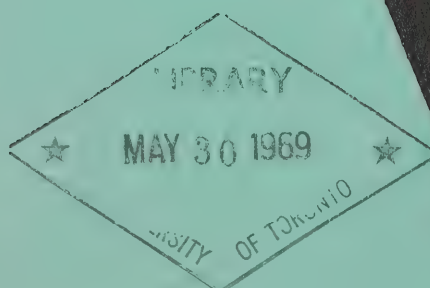
APPENDIX II

<u>Article</u>	<u>Characteristic</u>	<u>Remarks</u>
Acetone	Flam. liquid	
Acetylene	Flam. gas	see para. 8
Acid Hydrochloric	Corrosive liquid	
Acid Hydrofluoric	Corrosive liquid	
Acid Nitric	Corrosive liquid	
Acid Sulphuric	Corrosive liquid	
Alcohol	Flam. liquid	
Ammunition - small arms	Explosive	
Antifreeze	Flam. liquid	
Argon	Non flam. comp. gas	see para. 8
Batteries	Corrosive liquid	
Benzine	Flam. liquid	
Brake fluid	Flam. liquid	
Calcium Chloride	Oxidization	
Carbon Tetrachloride	Toxic	
Carbon Dioxide	Non flam. gas	
Carbon Monoxide	Flam. gas	
Chain Saws	see Combustion Eng.	
Charcoal	Flam. solid	
Chlorine	Non flam. comp. gas	see para. 8
Chloroform	Poisonous	
Combustion Engines	Flam. liquid/gas	
Defogging Equipment	Flam.	
Diesel Fuel	Flam. liquid	
Electrolyte	Corrosive liquid	
Ether	Flam. liquid	
Explosives	Explosive	see paras. 10 - 15
Film	Flam. solid	
Gasoline	Flam. liquid	
Helium	Non flam. comp. gas	see para. 8
Hydrogen	Flam. gas	
Kerosine	Flam. liquid	
Lamp Black	Flam. solid	
Oil	Flam. liquid	
Oxygen	Non flam. comp. gas	
Paint, dope, thinners	Flam. liquid	
Propane	Flam. gas	
Sulphur Dioxide	Non flam. gas	
Empty drums/cylinders	Flam. gas	



INFORMATION CIRCULAR

**LICENCES AND
ENDORSEMENTS**



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Personnel Licensing

0/21/64
20th August

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

PERSONNEL LICENSING - LICENCES AND ENDORSEMENTS

(Superseding Information Circulars 0/9/47, 0/62/52, 0/8/53, 0/17/56, 0/27/56, 0/8/57, 0/38/61, 0/12/62, 0/20/62, 0/27/62, 0/33/62, 0/23/63, 0/9/64, 0/14/64 and 0/15/64).

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THE INSTRUMENT RATING

INTRODUCTION

While it is the practice to issue either a Class I or a Class II Instrument Rating, the holder of a Class II Rating is not entitled to act as pilot-in-command under the Instrument Flight Rules but is restricted to co-pilot duties only.

It is now agreed however that the privileges attaching to the Class II Rating should be extended. Accordingly, the holder of a Class II Instrument Rating issued after May 1st, 1964 will be entitled to act as pilot-in-command under the Instrument Flight Rules, although on a restricted basis.

To qualify for a Class II Instrument Rating after May 1st, 1964, an applicant will be required to meet standards commensurate with in-command privileges. In order to accommodate the holders of current Class II Ratings who may require further training and practice to meet the new standards, one renewal of a Class II Rating restricted to "co-pilot duties only" may be granted provided application for renewal is made and a satisfactory test is completed prior to May 1st, 1965. Canadian pilots holding at least the equivalent of a valid "green card" instrument rating will be considered as holding a current instrument rating when applying for renewal of a civil instrument rating which has lapsed for more than twenty-four (24) months.

This circular outlines the conditions of issue and renewal, privileges and weather minima applicable to both the Class I Instrument Rating and the Class II Instrument Rating issued after May 1st, 1964.

CONDITIONS OF ISSUE AND RENEWAL - PRIVILEGES CLASS I - CLASS II INSTRUMENT RATINGS

GENERAL

- (a) LICENCE - An applicant shall hold a valid pilot licence issued under the Air Regulations.
- (b) TESTS AND EXAMINATIONS - All tests and examinations for issuance of a rating shall be completed during a twelve (12) month period.

The Initial Instrument Rating Check Flight shall, under normal circumstances, be conducted by a Department of Transport instrument check pilot.

KNOWLEDGE

An applicant shall pass written examinations covering:

- (a) Flight Navigation, Radio Aids; and
- (b) IFR Rules and Procedures.

The pass mark for each examination is 70 per cent.

NOTE: When the initial attempt of a written examination results in a failure a higher pass mark may be required on subsequent attempts.

EXPERIENCE-AEROPLANES

An applicant for a rating shall have completed not less than:

- (a) one hundred and fifty (150) hours of flight time on aeroplanes as pilot-in-command including not less than fifty (50) hours of cross-country flight time; and
- (b) forty (40) hours of instrument time of which not more than twenty (20) hours shall have been completed on instrument trainers.

NOTE: Instrument Time - is time during which a pilot is piloting an aeroplane solely by reference to instruments or is practicing, on the ground, simulated instrument flight on an approved instrument trainer.

SKILL

An applicant for an Instrument Rating shall demonstrate, in flight, on a type of aircraft with which he is thoroughly familiar by virtue of recent flying experience, a standard of skill commensurate with the privileges of the class of rating applied for. This demonstration shall include his ability:

- (a) to perform such manoeuvres as are necessary to demonstrate his competency in the operation of aircraft in instrument flight conditions;
- (b) to operate multi-engine aircraft solely by reference to instruments, at authorized maximum landing weight with one engine inoperative, if a rating on such aircraft is sought;
- (c) to interpret International Morse Code radio signals and while piloting aircraft under actual or simulated flight conditions, the conduct of orientation and approach procedures by the use of radio, and to give any other demonstration of skill required for the Instrument Rating;
- (d) to execute any other manoeuvres which may be essential to establish his competency.

NOTE: When an applicant for an Instrument Rating demonstrates the skill requirement on a single-engine or centre thrust multi-engine aeroplane, the privileges of the rating issued will be limited accordingly.

RENEWAL

An Instrument Rating may be renewed on completion of a satisfactory instrument rating flight check. If any rating has lapsed for more than twenty-four (24) months then the required examinations must be satisfactorily completed prior to the check flight. All check flights will be conducted by authorized Department of Transport Inspectors except that for renewal of a Class I Instrument Rating the check flight may be conducted by a Company check pilot delegated by the Department to conduct flight checks of company pilots.

RENEWAL PERIOD

- (a) The CLASS I INSTRUMENT RATING will be issued valid to the 1st day of the seventh month following the month in which the flight check was conducted but CLASS II INSTRUMENT RATING privileges only will be retained until the 1st day of the thirteenth month following.
- (b) The CLASS II INSTRUMENT RATING will be issued valid to the 1st day of the thirteenth month following the month in which the flight check was conducted.

PRIVILEGES

CLASS I INSTRUMENT RATING

The holder of a valid Class I Instrument Rating may, subject to the privileges of his pilot licence, act as pilot-in-command or co-pilot of any aeroplane under the Instrument Flight Rules.

CLASS II INSTRUMENT RATING

The holder of a valid Class II Instrument Rating may, subject to the privileges of his pilot licence:

- (a) act as co-pilot of any aeroplane under the Instrument Flight Rules;
- (b) act as pilot-in-command of any aeroplane being flown in accordance with the Instrument Flight Rules provided such flight is not a commercial flight.

IFR TAKE-OFF AND LANDING WEATHER MINIMA

Unless otherwise authorized, the weather minima for take-off and landing by the holder of an Instrument Rating shall be as specified in Table I for the Class of Rating held.

TABLE I

CONDITION	CLASS I INSTRUMENT RATING MINIMA	CLASS II INSTRUMENT RATING MINIMA
TAKE-OFF MINIMA	The ceiling and visibility shall be as specified in the Canada Air Pilot for take-off	The ceiling and visibility shall be 300 feet and $\frac{1}{2}$ mile in excess of that specified in the Canada Air Pilot for take-off
LANDING STRAIGHT-IN OR CIRCLING MINIMA	The ceiling and visibility shall be as specified, for the approach to be used, in the Canada Air Pilot	The ceiling and visibility shall be 500 feet and $\frac{1}{2}$ mile in excess of that specified, for the approach to be used, in the Canada Air Pilot
ALTERNATE AERODROME MINIMA	No aerodrome shall be selected as an alternate unless the ceiling and visibility are forecast, for the expected time of arrival, to be at or above the alternate minima specified for that aerodrome in the Canada Air Pilot	No aerodrome shall be selected as an alternate unless the ceiling and visibility are forecast, for the expected time of arrival, to be 500 feet and 1 mile in excess of the alternate minima specified for that aerodrome in the Canada Air Pilot

RESTRICTED RADIOTELEPHONE OPERATOR'S CERTIFICATE OF PROFICIENCY IN RADIO

1. Any person operating radio transmitting equipment installed in aircraft registered in Canada is required to hold a valid Restricted Radiotelephone Operator's Certificate or a Radio Operator's Certificate of higher grade.

2. Certificates of Proficiency in Radio are issued under the Radio Regulations annexed to the International Telecommunication Convention currently in force. The International Telecommunication Convention (Geneva, 1959) came into force on 1st May, 1961, and Certificates of Proficiency in Radio issued prior to that date will become invalid upon ratification of the International Telecommunication Convention of Geneva, 1959.

3. In the meantime, Restricted Radiotelephone Operators' Certificates issued on or after 1st May, 1955, may be automatically validated when submitted to a Regional Superintendent, Radio Regulations. Certificates issued between 1st January, 1954, and 1st May, 1955, may be validated or replaced provided the examiner is satisfied that the holder has retained, or demonstrates, his knowledge of the requirements of the certificate to be validated.

4. Replacement shall depend upon the condition of the certificate and whether the physical description of the holder is obsolete.

5. Active pilots or other flight crew members may have their Restricted Radiotelephone Operators' Certificates validated or replaced by mailing them to the nearest office of a Regional Superintendent, Radio Regulations, provided that:

- (1) The certificate of the holder was originally issued (not replaced) after 1st May, 1955, or
- (2) The certificate of the holder was originally issued under the Radio Regulations (Buenos Aires, 1952) prior to 1st May, 1955, or validated or replaced at any time under the Radio Regulations (Buenos Aires, 1952) and the holder has been for a period of six months since 1st May, 1955, actively engaged as a pilot or other flight crew member and his duties require the use of radiotelephone communication, and that
- (3) The above condition is certified by an officer of the licensed air carrier or carriers employing the holder over this period, or

- (4) In the case of a private pilot, the submission of an affidavit or other documentary evidence testifying to the required six months radiotelephone experience since May 1st, 1955.

6. Pilots or other flight crew members who are unable to meet the requirements of paragraphs 1 or 5 should apply in person to the nearest office of a Regional Superintendent, Radio Regulations or Radio Regulations Inspector.

7. To assist in this matter, the following is a list of the addresses of the Regional Superintendents, Radio Regulations, and Inspectors, Radio Regulations, where examinations for Certificates of Proficiency in Radio are conducted:

VICTORIA, B.C.

Inspector, Radio Regulations,
805 Government St.

PRINCE RUPERT, B.C.

Inspector, Radio Regulations,
Room 215, Federal Bldg.

VANCOUVER (1), B.C.

Regional Director, Air Services,
739 West Hastings St.

KELOWNA, B.C.

Inspector, Radio Regulations,
434 Bernard Avenue.

EDMONTON, ALTA.

Regional Director, Air Services,
Federal Bldg., 9820-107th St.

CALGARY, ALTA.

Inspector, Radio Regulations,
411 Public Bldg.

GRANDE PRAIRIE, ALTA.

Inspector, Radio Regulations,
Room 202, Richmond Bldg.,
10118 Richmond Avenue.

SASKATOON, SASK.

Inspector, Radio Regulations,
Room 412, Federal Bldg.

REGINA, SASK.

Inspector, Radio Regulations,
Room 414, New Post Office Bldg.

BRANDON, MAN.

Inspector, Radio Regulations,
204 Post Office Bldg., P.O. Box 415.

WINNIPEG, MAN.

Regional Director, Air Services,
General Post Office Bldg., 266 Graham Ave.

KITCHENER, ONT.

Inspector, Radio Regulations,
15 Duke St. Room 22, Federal Government Bldg.

HAMILTON, ONT.

Inspector, Radio Regulations,
Room 629, Canadian Government Bldg.,
150 Main St. West.

KINGSTON, ONT.

Inspector, Radio Regulations,
273 Federal Bldg., P.O. Box 633.

OTTAWA, ONT. (Ottawa Area Field Office)

Inspector, Radio Regulations,
Room 405, Garland Bldg., 142 Queen St.

TORONTO, ONT.

Regional Director, Air Services,
25 St. Clair Avenue East.

PORT ARTHUR, ONT.

Inspector, Radio Regulations,
330 Dominion Public Bldg.

NORTH BAY, ONT.

Inspector, Radio Regulations,
101 Worthington St. East., P.O. Box 596.

SAULT STE MARIE, ONT.

Inspector, Radio Regulations, Room 302
Federal Bldg., Queen & East Streets.

LONDON, ONT.

Inspector, Radio Regulations,
Rooms 406-408 Dominion Public Bldg.,
450 Richmond St., P.O. Box 413.

MONTREAL, P.Q.

Regional Director, Air Services,
Regional Administration Bldg.,
Montreal International Airport,
Dorval, P.Q.

MONTREAL, P.Q.

Inspector, Radio Regulations,
Room 725, 305 Dorchester St. West.

SHERBROOKE, P.O.

Inspector, Radio Regulations,
Federal Bldg., 315 King St. W.
P.O. Box 292.

PORT ALFRED, P.Q.

Inspector, Radio Regulations,
111 Du Port Ave.,
P.O. Box 430.

QUEBEC, P. Q.
Inspector, Radio Regulations,
Public Bldg., 390 Dorchester St.,
P.O. Box 3158, St. Roch Postal Station.

THREE RIVERS, P. Q.
Inspector, Radio Regulations,
Public Bldg., Post Office.

MONCTON, N. B.
Regional Director, Air Services,
New Federal Bldg.,
1081 Main St., P.O. Box 42.

SAINT JOHN, N. B.
Inspector, Radio Regulations,
Customs House, P.O. Box 1285.

HALIFAX, N. S.
Inspector, Radio Regulations,
Dominion Public Bldg., P.O. Box 217.

SYDNEY, N. S.
Inspector, Radio Regulations,
251 Federal Bldg., P.O. Box 281.

ST. JOHN'S, N.F.L.D.
Inspector, Radio Regulations,
Room 632 Sir Humphrey Gilbert Bldg.,
Duckworth Street, P.O. Box 5273.

LICENCE RENEWAL CERTIFICATE

When the holder of a licence undergoes a medical re-examination to extend the medical validity of his licence, he must present his Licence Renewal Certificate and ensure that the medical examiner endorses the result of the examination in the space provided for that purpose on the back of Form 26-0055.

Endorsement of satisfactory medical re-examination by an approved medical examiner will constitute renewal of his licence until issue of a new Licence Renewal Certificate or for a maximum period of thirty days from the date of medical re-examination whichever is the earlier.

Licence holders should note the "until" and "valid to" dates typed on the Licence Renewal Certificate. The privileges of the licence are renewed up to the stated date but the licence is not valid on the stated date.

For example, a licence renewed for all attaching privileges until December 28th, 1963, is valid only until midnight December 27th, 1963, and is not valid on December 28th, 1963.

A licence holder who does not wish to have his licence lapse should arrange for his next medical examination prior to the "valid to" date, bearing in mind that when the medical examination for renewal of a licence is taken during the 30 days preceding the "valid to" date, the licence renewal certificate will be issued for the appropriate period from the "valid to" date.

CLASSIFICATION AND CATEGORIZATION OF FLYING INSTRUCTORS

The following classifications of civil flying instructor rating may be issued to applicants who hold valid Commercial, Senior Commercial, or Airline Transport Pilot licences and who meet the appropriate conditions of issue as listed hereunder:

CLASS III CATEGORY (AEROPLANES)

Conditions of Issue

- (a) He shall have completed a minimum of 250 hours as pilot-in-command in aeroplanes.
- (b) He shall pass a written examination on Instructor's General Knowledge and Theory of Flight.
- (c) By means of a flight test, he shall demonstrate that he has average ability in normal flying manoeuvres and is conversant with flying training technique.

Privileges

- (a) To act as a flying instructor under the direct supervision of a Class I or Class II flying instructor until at least one year's experience as an instructor has been gained and a minimum of 200 hours as a flying instructor has been attained.

- (b) When an instructor has at least 2000 hours pilot-in-command flight experience or when the experience requirements outlined in (a) have been met, to act as the Chief Flying Instructor at a school not offering Department of Transport Approved flying courses.
- (c) When an instructor has at least 2000 hours pilot-in-command flight experience or when the experience requirements outlined in (a) have been met, to act as a flying instructor at a satellite flying school offering the Department of Transport Approved Course of Private Pilot flying training, providing that a written examination on Administration has been satisfactorily completed.

CLASS II CATEGORY (AEROPLANES)

Conditions of Issue

- (a) He shall have completed a minimum of 500 flying hours as a flying instructor in aeroplanes.
- (b) He shall pass a written examination on Administration, Instructor's General Knowledge and Theory of Flight.
- (c) By means of a flight test, he shall demonstrate that he has above average ability in normal flying manoeuvres and is average in flying training technique and instructor's general knowledge.

Privileges

- (a) To exercise the privileges of the holder of a Class III Instructor category.
- (b) To act as the Chief Flying Instructor at a flying school offering the Department of Transport Approved Course of Private Pilot flying training.
- (c) If he has an instrument instruction endorsement, to act as the Chief Flying Instructor at a flying school offering the Department of Transport Approved Course of Commercial Pilot flying training.
- (d) To conduct Private Pilot flight tests.
- (e) To act as Chief Flying Instructor at a satellite flying school offering the Department of Transport Approved Course of Private Pilot flying training.
- (f) To train and recommend for flight test applicants for flying instructor ratings who have not previously held civil flying instructor ratings.

CLASS I CATEGORY (AEROPLANES)

Conditions of Issue

- (a) He shall have completed a minimum of 1500 flying hours as a flying instructor in aeroplanes.
- (b) He shall pass a written examination on Administration, Instructor's General Knowledge and Theory of Flight.
- (c) By means of a flight test, he shall demonstrate that he is exceptional in normal flying manoeuvres, Instructor's General Knowledge and basic instrument flying ability.

Privileges

- (a) To exercise the privileges of the holder of a Class II and Class III instructor category.

A primary consideration for the issuance of an aeroplane instructor rating will be the applicant's knowledge of and ability to apply the principles outlined in the Flying Training Manual and Instructor's Guide, issued by the Department of Transport.

HELICOPTER CATEGORY

Conditions of Issue

- (a) He shall have completed a minimum of 250 hours as pilot-in-command in helicopters.
- (b) He shall pass a written examination on Instructor's General Knowledge and Theory of Flight for rotary wing aircraft.
- (c) By means of a flight test, he shall demonstrate that he has above average ability in normal flying manoeuvres and is conversant with helicopter flying training technique.

Privileges

- (a) To act as a flying instructor in helicopters.
- (b) Upon attaining at least 200 hours as a helicopter flying instructor, to train and recommend for flight test applicants for helicopter instructor ratings who have not previously held civil helicopter instructor ratings.

GYROPLANE CATEGORY

Conditions of Issue

- (a) He shall have completed a minimum of 250 hours as pilot-in-command in gyroplanes.
- (b) He shall have passed a written examination on Instructor's General Knowledge and Theory of Flight appropriate to gyroplanes.
- (c) By means of a flight test, he shall demonstrate that he has above average ability in normal flying manoeuvres and is conversant with gyroplane flying training technique.

Privileges

- (a) To act as a flying instructor in gyroplanes.
- (b) Upon attaining at least 200 hours as a gyroplane flying instructor, to train and recommend for flying test applicants for gyroplane instructor ratings who have not previously held civil gyroplane instructor ratings.

A primary consideration for the issuance of a helicopter or gyroplane instructor rating will be the applicant's knowledge of and ability to instruct to a recognized syllabus of training approved by the Department of Transport.

ADDITIONAL AUTHORITY

Authority to conduct aerobatic and/or instrument instruction will be an additional endorsement to any class of category.

INSTRUMENT ENDORSEMENT

To obtain an instrument endorsement, the applicant must:

- (a) Have completed a minimum of 20 hours instrument flight time of which not more than 5 hours may have been acquired in flight simulators.
- (b) Satisfactorily complete the written examination required for the instrument rating.
- (c) Demonstrate his ability to perform all required normal flight manoeuvres with sole reference to basic instruments.
- (d) Demonstrate his ability to instruct on basic instrument flying procedures.
- (e) Demonstrate his knowledge of radio navigational procedures by satisfactorily completing one of the following:
 - (1) A lost orientation and standard range approach.
 - (2) ADF tracking and approach procedures on pre-determined headings.
 - (3) Omnirange tracking and approach procedures.

ACROBATIC ENDORSEMENT

To obtain an aerobatic endorsement, the applicant must, by means of a flight test, demonstrate his ability to perform and instruct in the required aerobatic manoeuvres.

ADDITIONAL CLASSES

An aeroplane instructor applying for a helicopter or a gyroplane instructor rating must:

- (a) Have a minimum of .75 hours pilot-in-command flying time in helicopters or gyroplanes.

- (b) Successfully complete the appropriate written examination.
- (c) Submit a certificate from a currently licensed helicopter or gyroplane instructor certifying that he is competent to undergo a flight test.
- (d) Demonstrate by means of a flight test that he has above average ability in normal flying manoeuvres and is conversant with helicopter or gyroplane flying training technique.

A helicopter or gyroplane instructor wishing to qualify for an aeroplane instructor rating must:

- (a) Have a minimum of 175 hours pilot-in-command flying time in aeroplanes.
- (b) Successfully complete the appropriate written examination.
- (c) Submit a certificate from a currently licensed Class I or Class II flying instructor certifying that he is competent to undergo a flight test.
- (d) Demonstrate by means of a flight test that he has above average ability in normal flying manoeuvres and is conversant with flying training technique.

APPLICATION

An applicant who has not previously held an aeroplane instructor rating must submit a certificate from a Class I or Class II instructor certifying that he has completed a minimum of 12 hours dual instructor training with a Class I or Class II instructor and is competent to undergo a category test.

An applicant who has not previously held a helicopter instructor rating must submit a certificate from a helicopter instructor certifying that he has completed a minimum of 12 hours dual training with a helicopter instructor and is competent to undergo a category test.

An applicant who has not previously held a gyroplane instructor rating must submit a certificate from a gyroplane instructor certifying that he has completed a minimum of 12 hours dual training with a gyroplane instructor and is competent to undergo a category test.

Written application must be made to the Regional Director, Air Services prior to a flight test.

RENEWAL

The maximum period of validity in all cases will be twelve (12) months but may be restricted to shorter periods. Renewal of a category requires another flight test. To retain a Class I or Class II rating, the instructor must have completed at least 50 hours of flying instruction in the twelve month period preceding the annual flight test.

An applicant whose category has lapsed for more than twelve (12) months must submit a certificate from a Class I or Class II instructor certifying that he is familiar with current instructional technique and is competent to undergo a category test.

Category tests will be conducted only by examiners approved by this Department, in aircraft with a normal system of control and in the case of aeroplanes, capable of being spun, supplied by and at the expense of the applicant.

GLIDERS AND GLIDER PILOTS - OPERATION AND LICENSING

Glider Pilot Licences

- (a) Student Glider Pilot Permit - Conditions of Issue and Privileges are listed on the application for Student Glider Pilot Permit.
- (b) Glider Pilot Licence - Conditions of Issue and Privileges may be found in Information Circular - Conditions of Issue and Renewal - Flight Crew Licences.
- (c) Glider Pilot Instructor Rating - The holder of a Glider Pilot Licence may be issued with an instructor rating, provided the following requirements are met:
 - (i) The applicant must be not less than 18 years of age,

- (ii) The applicant shall have completed a total of 20 hours of glider flying, including a minimum of 125 flights or a total of 10 hours glider flying including a minimum of 200 flights. (This requirement may be reduced in the case of an applicant having experience in powered aircraft).
- (iii) The experience must include a minimum of 10 flights in a two seat glider, and
- (iv) The applicant shall have a recommendation from an authorized glider pilot instructor.

Certification of Gliders

Gliders must be registered in accordance with the Air Regulations and have a valid Certificate of Airworthiness or Flight Permit before they may be flown. The requirements for a Certificate of Airworthiness and for a Flight Permit may be found in the Engineering and Inspection Manual.

Tow Aircraft Log Entries

Subject to the approval of the Regional Director, Air Services, and to any additional requirements he may specify, recognized glider clubs may on written application be granted authority to make "block" flight time entries in the Journey and Aircraft Log of Tow Aircraft in lieu of separate entries for each flight. Such authority, when granted, will be subject to

- (i) The maintenance of a satisfactory flight sheet on which the duration of each tow flight is recorded.
- (ii) The number of flights and the total flight time for each day being recorded in the Journey and Aircraft Log on the completion of each days flying.

Tow Pilot Qualifications

If the pilot of the tow aircraft holds a private pilot licence, he shall have not less than 100 hours pilot-in-command flight time experience of which 25 hours may have been obtained on gliders and shall be thoroughly familiar with the glider flight limitations and necessary emergency procedures.

The Crediting of Glider Flight Time Towards the Flight Time Required for Pilot Licences

Solo or pilot-in-command flight time in gliders may be credited towards the flight time required for a Private, Commercial, Senior Commercial or Airline Transport Pilot Licence on the following basis:

- (i) Not more than 25 per cent of the total flight time required for a Private or Commercial Pilot Licence may be acquired in gliders,
- (ii) Not more than 25 per cent of the pilot-in-command flight time required for a Commercial Pilot Licence may be acquired in gliders,
- (iii) Not more than 50 hours of flight time acquired in gliders may be credited towards the flight time required for the Senior Commercial or Airline Transport Pilot Licence.

Flight time in gliders will not be credited towards the reduced flight time requirements for licences issued under the approved courses of Private or Commercial Pilot Training.

Applications

Application forms for permits and licences may be obtained from the office of the appropriate Regional Director, Air Services.

ALTERNATE ENDORSEMENT OF LANDPLANE OR SEAPLANE AUTHORITY ON PILOT LICENCES

Effective this date alternate endorsements to pilot licences for seaplane or landplane operation will be made only when the applicant has completed a minimum of five (5) hours of conversion training under the supervision of either:

- (a) a licensed flying instructor with the appropriate endorsement;
- (b) a Commercial, Senior Commercial or Airline Transport pilot who holds the appropriate endorsement.

Three of the five hours must be dual instruction and upon completion of the conversion training the following recommendation must be submitted to this Department prior to endorsement of the licence.

"This is to certify that has completed a conversion course to ☐ seaplanes ☐ landplanes. A total of hours dual and hours solo has been completed under my supervision and it is recommended that pilot licence No. be endorsed accordingly."

Signed:

Licence No.

TYPE ENDORSEMENT OF AIRCRAFT ABOVE 12,500 POUNDS ON PILOT LICENCES

When applying for the endorsement of an additional type of aircraft on his licence a pilot is required to produce a recommendation from his Company Check Pilot certifying his competency on the new type aircraft.

The form of recommendation used by various operators has not always been satisfactory to this Department. The following form, or a company form approved by the Director Civil Aviation, shall be used when recommending the endorsement of additional types of aircraft above 12,500 pounds.

Dated

Regional Superintendent, Air Regulations.

Dear Sir:

This is to certify that Mr. holder of valid Pilot Licence No. has undergone a conversion course on aircraft consisting of hours of dual instruction, hours of co-pilot flight time, and a qualifying flight as first pilot of hours/minutes which he completed in the seat normally occupied by the pilot-in-command and during which he demonstrated a degree of skill equal to the minimum required of a pilot-in-command on the type.

This pilot's log book has been certified by the undersigned accordingly.

It is recommended that the aforementioned pilot licence be endorsed to include this type.

Medical expiry date of pilot's licence

.....
Chief Pilot

COMMERCIAL PILOT LICENCE VALID FOR DAY FLYING ONLY

The endorsement "valid in Canada only" may now be deleted from any Commercial Pilot Licence that is restricted to day flying, upon presentation of the licence to the Regional office of the Civil Aviation Branch.

The endorsement "day flying only" may be deleted in the same way after submission of proof of ten hours night flying experience including not less than ten take-offs and landings as pilot-in-command.

Commercial Pilot Licences limited to "day flying only" will continue to be issued to applicants without sufficient night flying experience.

The above changes have been made possible as a result of amendments to Annex I of the Convention recently adopted by the Council of ICAO.

RECOGNITION OF PILOT LICENCES ISSUED BY CONTRACTING STATES (FOR TOURIST PURPOSES)

Heretofore, the holder of a pilot licence issued in a Contracting State has been required to obtain a Canadian licence in order to fly Canadian registered aircraft.

Effective immediately, a Citizen of a Contracting State which grants reciprocal aeronautical privileges to Canadians on equal terms and conditions with subjects of such State may be issued with a Private Pilot Permit (Tourist) provided he is in possession of a valid pilot licence issued by such State. This permit will be issued upon application to a Regional Superintendent, Air Regulations, and completion of a satisfactory examination on Air Regulations, Air Traffic Rules and Procedures.

The validity of this permit shall not extend beyond the period of validity of the applicant's licence or a maximum period of ninety (90) days, whichever is the less.

PILOT LICENCES - PERSONNEL CANADIAN ARMED SERVICES

Active and retired personnel of the Canadian Armed Services who are of pilot wings standard may be granted concessions with respect to the knowledge and skill requirements for issue of pilot licences providing application is made not later than 3 months following the date of retirement, discharge or termination of active reserve duty and all other conditions of issue are met.

THE PRIVATE PILOT LICENCE - Applicants for this licence with at least 20 hours of flight time during the 12 months preceding application who successfully complete the required Air Regulations examination may have the remaining knowledge and skill requirements waived.

THE COMMERCIAL PILOT LICENCE - Applicants for this licence with at least 50 hours of flight time during the 12 months preceding application who successfully complete the required Air Regulations examination may have the remaining knowledge and skill requirements waived.

THE SENIOR COMMERCIAL PILOT LICENCE - Applicants for this licence with at least 100 hours of flight time during the 12 months preceding application may have the skill requirement waived.

INSTRUMENT RATING - Flight checks will not be waived under any circumstances.

MEDICAL STANDARDS - AMPUTATION CASES

Civil Aviation medical standards have not permitted heretofore the issue of an Air Pilot's Certificate unless an applicant has the normal use of all limbs.

The Minister has now given authority for the issue of Private Air Pilot's Certificates, for "simplified control" aircraft only, to applicants who have lost one leg but who can satisfy all other physical requirements and otherwise qualify for a licence.

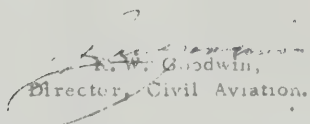
The Certificate when issued, will restrict the holder to the flying of "simplified control" aircraft, of which the Ercoupe is an example.

CAUTION TO FLIGHT CREW PERSONNEL

The attention of all Flight Crew Licence holders is directed to Section 408 of the Air Regulations which prohibits a licence holder from acting in the capacity in which a licence is issued when he is suffering from any physical disability that might render him unable to meet the physical standards or his ability is impaired by drugs or alcohol.

Blood Donors - It is recognized that some persons may suffer temporary after-effects following a blood donation. In the interest of safety, therefore, Blood Donors should not act as flight crew members for a period of 24 hours following a blood donation.

Use of Antihistamines - Antihistamines, anti-nauseants and appetite suppressing medications have a definite effect on the nervous system, and a licence holder should not act as a flight crew member for a period of 24 hours following the use of such drugs.


E. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
General Publication

0/24/64
30th July

Page 1 of 2

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

REPORTING OF FIREBALL AND METEORITE OBSERVATIONS

The National Research Council is currently conducting a detailed study of meteorites. In this connection, they are making a concerted effort to collect data on meteorites that have fallen to earth and meteor sightings which might lead to the finding of meteorites (fragments or pieces of meteors which have fallen to earth) as a great deal of useful scientific information can be obtained from this source particularly if early recovery is made. The cooperation of flight personnel in reporting sightings that might lead to the recovery of a meteorite would therefore be appreciated.

As a guide in determining what meteor sightings will be of scientific value, they may be separated into two general categories "Shooting STARS" and "Fireballs".

"Shooting Stars" can be observed many times on any clear night but reports of their sightings are of little use since they will normally burn up in the atmosphere and not fall to earth.

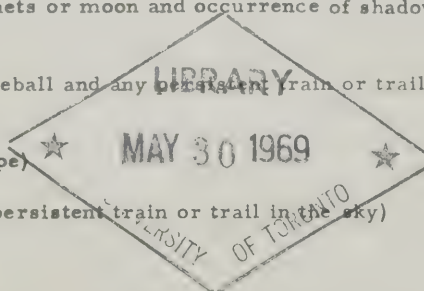
"Fireballs" might be described as spectacular meteors, brighter than the brightest planet, of sufficient brilliance, in fact, to cast shadows and may be accompanied or followed by a "sonic boom" type of noise. They are usually seen moving rapidly across the sky and sometimes a trail of glowing particles is left behind. The meteor may explode with a burst of light and a loud sound several times during a single fall. The National Research Council Committee is anxious to receive reports of such sightings with as little delay as possible.

"Fireball" sightings made in flight may be reported to Aeradio, Meteorological and Air Traffic Control units after landing or mailed (postage free) to:

Meteor Centre,
National Research Council,
Ottawa, Canada.

All reports should include as much of the following information as is relevant,

- a) Date and time of sighting (GMT to be used)
- b) Condition of sky (clear, cloudy, haze, etc.)
- c) Location of observer (either precise position on ground or geographical reference)
- d) Occurrence of bursts (number and approximate position along path)
- e) Luminosity (brightness compared to planets or moon and occurrence of shadows cast by nearby objects, if any)
- f) Colour (distinguish between colour of fireball and any persistent train or trail after passage of fireball)
- g) Form (size in relation to moon, and shape)
- h) Duration (both of fireball in motion and persistent train or trail in the sky)



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- i) Sounds (description of sound and time interval between sighting the fireball and hearing the sound)
- j) Position in sky (positions of beginning and end of fireball path, both azimuth and elevation)
- k) Any other unusual observations.

Should an observer feel that a specific sighting might be of more than usual significance, (i. e., observed to hit the earth) he may contact the nearest regional representative of the Associate Committee on Meteorites direct. The regional addresses are as follows:

Maritimes	-	Rev. M. W. Burk-Gaffney, St. Mary's University, Halifax, N. S.
Quebec	-	Mr. Wm. A. Warren, 30 52nd Avenue, Lachine, Que.
Ontario	-	Royal Astronomical Society of Canada, 252 College Street, Toronto 2B, Ontario.
	-	Meteor Centre, National Research Council, Ottawa 2, Ontario.
Manitoba	-	Prof. H. D. B. Wilson, University of Manitoba, Winnipeg, Manitoba.
Saskatchewan	-	Mr. John V. Hodges, 1554 Elphinstone Street, Regina Saskatchewan.
Alberta	-	Prof. R. E. Folinsbee, University of Alberta, Edmonton, Alberta.
British Columbia	-	Dr. W. F. Slawson, University of British Columbia, Vancouver, B. C.

Since the primary objective in gathering reports of fireball sightings is to determine the area from which meteorite particles may be quickly recovered, the Committee is also interested in receiving reports of the finding of meteorites. Literature which will be of some assistance in identifying meteorites is available in Air Traffic Control Units, Aeradio Stations, Marine Radio Stations, and Meteorological Offices. Reports of findings or, if the finder wishes, the meteorite fragment should in all cases be sent by mail directly to the Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario. In this regard it should be noted that meteorites are not dangerously radio active and may be handled without special precautions once they have cooled to normal temperature. The Geological Survey of Canada will pay \$100.00 or more for the first specimen of any Canadian meteorite that is acquired for the National Meteorite Collection.



R. W. Goodwin,
Director, Civil Aviation.

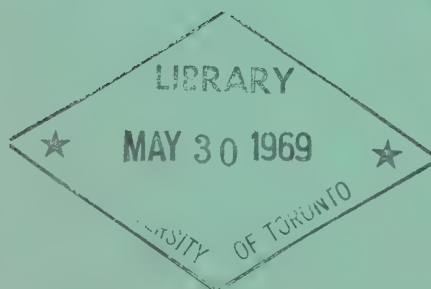


Government
Publication



INFORMATION CIRCULAR

AIRMANSHIP



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Airmanship

0/27/64
30th November

DEPARTMENT OF TRANSPORT AIR SERVICES CIVIL AVIATION BRANCH

AIRMANSHIP

(Superseding Information Circulars 0/76/40, 0/58/41, 0/9/49, 0/63/49, 0/67/52, 0/17/53, 0/18/53, 0/9/54, 0/23/57, 0/34/57, 0/5/58, 0/11/58, 0/24/58, 0/2/59, 0/22/59, 0/11/60, 0/25/60, 0/35/60, 0/10/61, 0/17/61, 0/22/61, 0/26/61, 0/5/62, 0/14/62, 0/28/62, 0/29/62, 0/36/62, 0/41/62, 0/18/63, 0/34/63, 0/4/64, 0/12/64).

INTRODUCTION

To ensure the safety of aircraft in flight, good airmanship must be practised at all times. The Civil Aviation Branch is vitally concerned with the advancement of aviation safety and has, over the years issued appropriate information circulars concerning hazardous conditions and situations along with suggestions for good operating practises which should be adhered to in order to avoid these hazards.

This information circular, which will be revised and updated as appropriate, represents a consolidation of previous circulars compiled for your guidance. All airmen should study and be familiar with its contents.

R. W. Goodwin,
Director, Civil Aviation.

..... 2

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SECTION I

TAKE-OFF AND LANDING

PILOT VITAL ACTION CHECK LISTS

A number of aircraft accidents have been directly attributed to the lack of proper vital action checks by the pilots concerned.

It is essential that pre-take-off, pre-landing, and other necessary vital action checks be performed with care.

While this Department does not prescribe standard checks to be performed by pilots it is strongly recommended that each owner equip his aircraft with the manufacturer's recommended check lists. If such check lists are not available satisfactory lists should be prepared using those items of the following universal lists which are vital to the type of aircraft being flown. For any specific type of aircraft, only relevant items should be included in the lists which should be arranged in an orderly sequence having regard to the cockpit layout.

(a) Pre Take-Off Check List

Hydraulics	- Pressure
Safety Belts	- All Fastened
Doors and Windows	- Closed and Locked
Trim Tabs	- Set
Temperatures	- Within Limits
Pressures	- Within Limits
Control Pedestal Friction	- Adjusted
Tail Wheel	- Locked (on the runway)
Water Rudders	- Up
Mixtures	- Rich
Carburettor Heat	- Checked-Set as Required
Pitch	- Set for Take-off
Fuel	- Selectors - Contents - Crossfeed -
	- Pressures - Booster pumps- Primers Locked
Flaps	- As Required
Cowl Flaps	- As Required
Gyros	- Set and Uncaged
Switches	- Magnetos - On
	- Generators - On
	- Pitot Heat - As Required
Anti-Collision Beacon	- On if Required
Flight Controls	- Checked for Free, Full and Proper Movement

(b) Pre Landing Check List

Fuel	- Selectors - Contents - Crossfeed - Pressures -
	- Booster Pumps
Brakes	- Checked - Parking Brakes off
Undercarriage	- Down
	- Amphibious - As Required
Water Rudders	- Up
Mixtures	- Rich
Pitch	- Set for Landing
Carburettor Heat	- Checked - set as Required
Flaps	- As Required
Safety Belts	- All Fastened

Careful adherence to vital action checks can and will prevent accidents.

FLYING OPERATIONS IN MOUNTAINOUS REGIONS

The importance of proper training, procedures and pre-flight planning when flying in mountainous regions is emphasized.

Some of the factors to be taken into consideration regarding the effect on aircraft performance when operating under these conditions are:

- (a) Elevation of the airport
- (b) Temperature and pressure
- (c) Turbulence and wind effect
- (d) Determination of safe take-off procedures to ensure clearance over obstacles and intervening high ground.

All pilots and operators are advised to use extreme caution when operating in mountainous regions and to ensure that all factors are considered before commencing a flight.

USE OF HIGHWAYS FOR LANDING AND TAKING OFF OF AIRCRAFT

It is not good airmanship to land an aircraft on or take off from any public highway.

Any such action on the part of a pilot would, in addition to being contrary to the ordinary good practice of the air, be likely to endanger the life or property of others and might therefore be construed as a violation of the Air Regulations.

If, because of an emergency, a landing is made on a public highway, the pilot should immediately report the happening to the R. C. M. Police or to the appropriate local police and under no circumstances should he attempt to take off unless the appropriate police officials are satisfied that the life or property of others will not be injured or damaged by such take off.

Notwithstanding any precautions which may be taken by police officials, the use of a public highway for take off is prima facie proof of the acceptance by the pilot of the suitability of that area for the intended operation.

THE EFFECT OF TEMPERATURE AND ALTITUDE ON AIRCRAFT PERFORMANCE

Aircraft performance figures are reduced to standard atmosphere conditions, and, under these conditions an aircraft can be expected to perform in a manner approximating the manufacturers performance figures. However, actual atmospheric conditions are rarely the same as standard atmosphere and it is therefore important to know the effect that variations from the standard will have on aircraft performance.

Standard Atmosphere - is assumed to have a pressure of 29.92 inches of mercury (1013.2 mbs.) at a temperature of 59°F (15°C), at sea level, which temperature is assumed to decrease at 3.56°F (1.98°C) per 1,000 ft. up to 36,000 ft. and to remain constant at -69.7°F (-56.5°C) above this height.

The effect of temperature and pressure varying from "standard" is summarized below:

- (1) If the air is hotter: -

- (a) More runway is needed to take off.
- (b) The rate of climb will be less.
- (c) The approach will be faster. (T. A. S. faster than the I. A. S.)
- (d) The landing roll will be longer.

- (2) If the aerodrome is higher (lower pressure): -

- (a) More runway is needed to take off.
- (b) The rate of climb will be less.
- (c) The approach will be faster. (T. A. S. faster than the I. A. S.)
- (d) The landing roll will be longer.

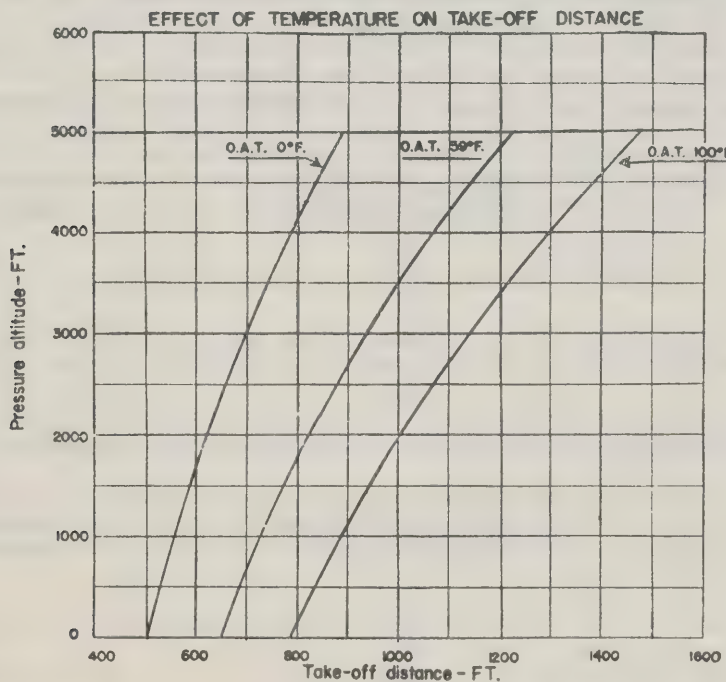
(3) If the temperature is higher and the pressure is lower: -

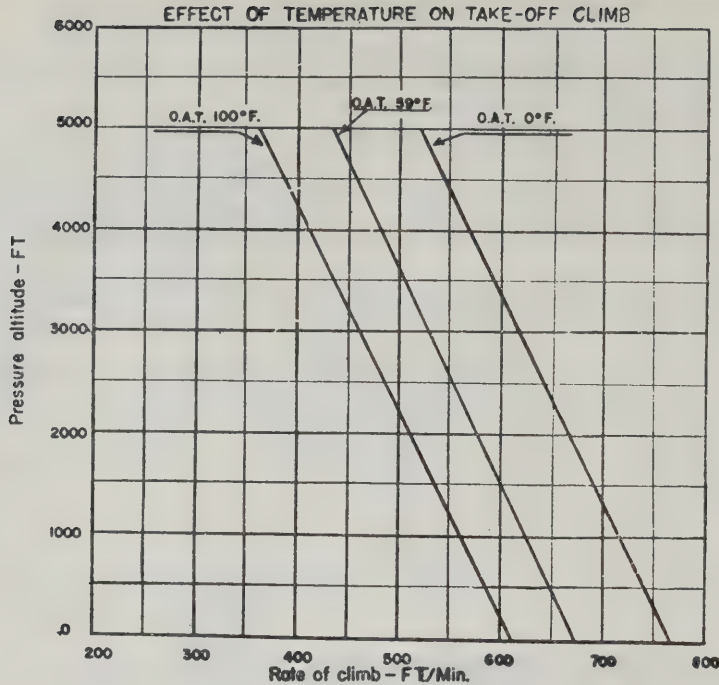
- (a) Still more runway is needed to take off.
- (b) The rate of climb will be even less.
- (c) The approach will be even faster.
- (d) The landing roll will be even longer.

As an illustration of how the take-off and rate of climb performance of an aeroplane changes with altitude, assuming a constant temperature of 59°F., the following table is prescribed for a light aeroplane of such weight, size and horsepower that it will perform according to the following figures:*

* Based on a wing loading of $7\frac{1}{2}$ lbs./square foot and a power loading of 20 lbs./horsepower.

Airport Altitude Above Sea Level	Approximate Take-off Distance Required	Approximate Rate of Climb
0	647	672
1,000	725	625
2,000	820	575
3,000	940	530
4,000	1,070	480
5,000	1,220	430





The change in performance of the aeroplane at these airports if the day is very hot, say 100° F., will be:

Airport Altitude Above Sea Level	Approximate Take-off Distance Required	Approximate Rate of Climb
0	785	612
1,000	880	562
2,000	1,005	510
3,000	1,145	460
4,000	1,300	410
5,000	1,485	360

The change in performance of the aeroplane at these same airports on a cold day, say 0° F., will be:

Airport Altitude Above Sea Level	Approximate Take-off Distance Required	Approximate Rate of Climb
0	498	767
1,000	550	716
2,000	620	670
3,000	695	618
4,000	785	570
5,000	890	520

From the foregoing tables and charts it is obvious that the performance of an aeroplane is reduced at either high altitude or high temperature. The reduction in performance becomes more appreciable when the two act together, that is, at high altitude and high temperature. Under these conditions, it is emphasized that unless extra runway length is available, and no obstructions exist, a suitable reduction in take-off weight must be made in order to avoid a serious accident.

Manufacturers of most modern aeroplanes have prepared Aeroplane Manuals which show the changes in performance with altitude and temperature. Pilots and Operators are advised to make full use of the information contained therein. When an aeroplane flight manual is not available, all available

performance figures should be obtained from the aeroplane manufacturer. However, where performance figures cannot be obtained and when extreme conditions exist, it is suggested that before a flight is undertaken at maximum take-off weight, a test flight with the aeroplane in the light condition should be made.

It should be noted that the variation in performance with altitude and temperature is more noticeable in the case of a light aeroplane.

DOORS OPENING IN FLIGHT - BEECHCRAFT, MODEL 35 (BONANZA)

Beechcraft, Model 35 aeroplanes have been involved in fatal accidents following the opening of a door in flight. In each case it was reported that the pilot lost control of the aircraft while at low altitude in the circuit.

In a number of flight tests conducted after these accidents, it was observed that:

1. The sudden rush of air around the open door edges is extremely noisy and may cause considerable alarm to passengers and crew.
2. Once open, the door tends to remain open 3 or 4 inches and is difficult or impossible to close in flight.
3. The open door in itself has little or no significant effect on the control of the aircraft or its handling characteristics.

From the results of these tests it is considered that the opening of a door in flight could, particularly while on final approach, so divert the attention of the pilot as to result in loss of control.

Reports from a number of sources indicate that the distractions and problems associated with the opening of a door in flight are not confined to the Beechcraft Bonanza, but also apply to other low wing aircraft having similar aerodynamic properties.

Pilots of Beechcraft Bonanza and other low wing aircraft having similar aerodynamic properties should exercise extreme care to ensure that doors are securely closed and locked before taking off. If, however a door should open in flight - REMAIN CALM, reassure the passengers and LAND WITH CAUTION.

CROSS-WIND LANDING LIMITATIONS - LIGHT AIRCRAFT

Approximately 10% of all aircraft accidents involving light aircraft in Canada are attributed to failure on the part of the pilots concerned to compensate for cross-wind conditions on landing.

Aircraft of United States manufacture are designed to withstand groundlooping tendencies on landing in 90-degree cross-winds up to a velocity equal to 0.2 (20 per cent) of their stalling speed.

This information in conjunction with the known stalling speed of a particular aircraft makes it possible to use the cross-wind component graph printed below to derive a "general rule" for most light aircraft manufactured in the United States. Examples of the method used in this interpolation are shown below:-

Example # 1 - Aircraft with a stalling speed of 60 m. p. h.

Wind-degrees Off Runway	Permissible Wind Speeds	
90-degrees	(0.2 x 60 m. p. h. stalling speed)	= 12 m. p. h.
60-degrees	Using cross-wind component graph	= 14 m. p. h.
30-degrees	Using cross-wind component graph	= 24 m. p. h.
15-degrees	Using cross-wind component graph	= 45 m. p. h.

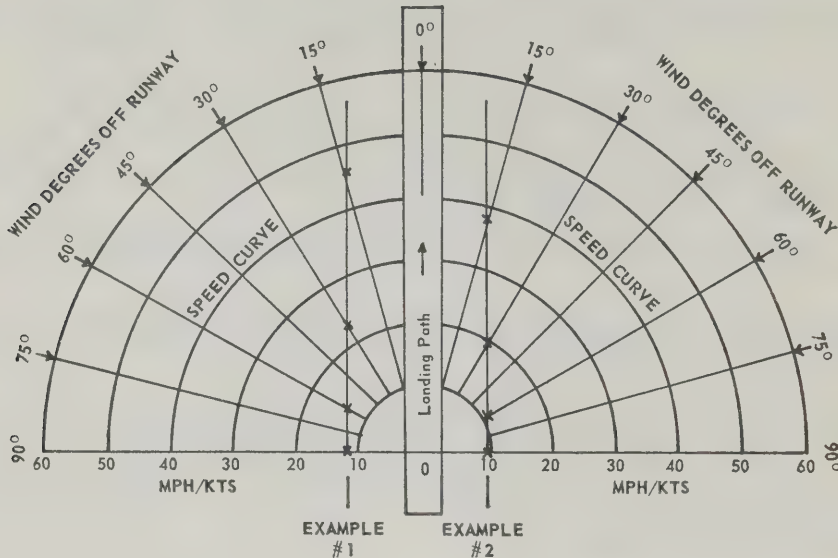
Example # 2 - Aircraft with a stalling speed of 50 m. p. h.

Wind-degrees

90-degrees
60-degrees
30-degrees
15-degrees

Permissible Wind Speeds

(0.2 x 50 m. p. h. stalling speed) = 10 m. p. h.
Using cross-wind component graph = 12 m. p. h.
Using cross-wind component graph = 20 m. p. h.
Using cross-wind component graph = 38 m. p. h.



LANDING TECHNIQUE AND SAFETY

By permission of The Ministry of Transport and Civil Aviation of the United Kingdom the following is reprinted and circulated for the information and guidance of all concerned.

"INTRODUCTION

1. An analysis of accident statistics together with intensive international research aimed at the development of more precise landing distance requirements has emphasized the importance of knowing the significance of the various factors, such as wet surfaces and incorrect approach speeds, in relation to landing safety. This document summarises the relevant information for the benefit of pilots and operators. Little of the information is new but it has not, so far as is known, been collated before or made readily available outside technical circles.

1.2 Specifically this Circular contains:-

- (a) information on the increase in landing distance which results from adverse conditions;
- (b) an explanation of the mechanics of the landing roll and their effect;
- (c) a discussion on the effects of various landing techniques with suggestions for determining the optimum technique;

and the attention of pilots is particularly drawn to paragraphs 4 at seq.

1.3 It is significant that an analysis of overrun accidents indicates that, in the majority of cases, the accident resulted from a combination of excessive speed and a slippery runway surface. In many instances the landing distance available was, even allowing for the slippery surface, theoretically more than adequate. It is probable, therefore, that a more accurate knowledge of the adverse effect of a slippery runway surface and excessive speed and the correct technique required to reduce landing roll under these conditions would have prevented these accidents.

1.4 When considering their application to specific operations the landing techniques suggested in this Circular should be studied in relation to the other phases of the approach. They are not, of course, recommended as the only procedures to be employed irrespective of local conditions.

2 INCREASE IN LANDING DISTANCE RESULTING FROM ADVERSE CONDITIONS

2.1 Pilots will wish to be aware of the effect on the landing roll of adverse runway conditions and departures from the optimum landing technique. A Table has, therefore, been prepared (Table 1) showing the effect of various techniques and runway conditions on the landing distance of a typical present day piston-engined transport aircraft. The Table is in the form of a block diagram at the top of which is shown a basic landing distance for the purpose of comparison, this being the distance required under normal operating conditions using a representative airline technique. The basic distance is given both for a dry and a wet runway. Below the basic distance are set out the distances required under varying conditions and techniques and combinations of the two. The effect of intermittent brake application should be noted, e.g. on a typical transport aeroplane a 5 second delay in applying the brakes after touch down costs 225 ft. on a dry runway.

2.2 The characteristics of the typical transport aircraft are assumed to be as follows:-

- (a) nose wheel landing gear;
- (b) non-automatic brakes of average power (0.25 g with brakes at limiting torque);
- (c) four piston engines; reverse pitch not used; and
- (d) stalling speeds:
 - (i) landing flap, 90 knots EAS;
 - (ii) approach flap, 91 knots EAS;
 - (iii) take-off flap, 97 knots EAS;
 - (iv) flaps up, 105 knots EAS.

As already mentioned the basic landing distance assumes the use of normal operating technique. The values of speeds and heights taken as representing normal operating technique have been derived from data covering many hundreds of approaches and landings in several countries by typical transport aircraft operating on normal services. This data has provided the following values:-

- (a) Threshold height: the height of the wheels over the beginning of the runway is assumed to be 20 ft. in conditions of light wind and when the aircraft is flown in the normal manner.
- (b) Threshold speed: the corresponding speed over the threshold is assumed to be 115 knots.
- (c) Touchdown speed: the corresponding touchdown speed is assumed to be 100 knots.

3 THE MECHANICS OF THE LANDING ROLL

With an understanding of the mechanics of the landing roll it is easier to appreciate how the roll is affected by different techniques and conditions. The following is a short explanation of the principal factors involved.

3.1 The first point to appreciate when considering the mechanics of the landing roll is that the greater part of the roll is covered at a relatively high speed. This is because, when the aircraft is slowing down, the time spent in each equal band of speed (100 to 90 knots, 90 to 80 knots, etc.) is roughly the same, but the distance covered is proportional to the mean speed of the band (95 knots, 85 knots, etc.). This is shown diagrammatically in figure 1.

3.2 The effect of wing lift

During the landing roll the aircraft is retarded by aerodynamic drag and the use of brakes. The aerodynamic drag, excluding that due to the propellers, varies as the square of the air speed. The lift from the wings is also proportional to the square of the air speed. Thus, at the higher speeds, the weight on the wheels is considerably reduced as shown in figure 2. However, for a given coefficient of friction between tyre and runway, the maximum retarding force which the brakes can provide is proportional to the weight on the wheels (in modern aeroplanes the brakes are sufficiently powerful to lock the wheels at most speeds on a wet surface). It follows that the retarding force of the brakes is reduced at high speed. If, for convenience, it is assumed that the coefficient of friction between the tyre and the runway remains constant, the relative contribution of aerodynamic drag and braking drag to the total retarding force would be as shown in figure 3. Since, in practice, the effect of speed is normally to reduce the coefficient of friction, as explained in detail in sub-paragraph 3.3, the retarding force is, in most cases, still further reduced at high speeds.

3.3 The effect of speed on the coefficient of friction

In figure 4 the variation of the coefficient of friction with speed is shown. It will be seen that, except in the case of icy surfaces, it decreases as speed increases, the effect being particularly marked on wet surfaces. A possible explanation of these effects is given later in this paragraph. In order to understand the data provided in figure 4 it is necessary to appreciate the relationship between the coefficient of friction and the braking force attainable. The full theoretical braking force, which is given by the formula $\text{Force} = \text{Weight on Braked Wheel} \times \text{Coefficient of Friction}$, cannot be achieved in practice since, at present, it is not possible to maintain the braking force at its optimum value even when an anti-skid mechanism is fitted and, without such a device, pilots are naturally apprehensive of skidding unless the surface is such that the risk of a tyre burst is small or is acceptable because of grave emergency. An attempt has been made to assess the maximum degree of retardation that a pilot can expect to achieve with existing types of brakes not fitted with an anti-skid device and using a technique which seeks to avoid locking the wheels. It appears likely that, in normal operations, pilot-operated brakes without anti-skid devices are capable of producing a retardation effect roughly equivalent to 30% of the theoretical braking force on a dry surface and 45% on a wet surface. A good anti-skid mechanism may permit factors of the order of 70% and 80%, respectively, to be attained. As mentioned above the coefficient of friction on a wet surface decreases rapidly with increase in speed. This is believed to be due to the fact that, as speed increases, there is less time for the water between the tyre and the runway surface to be squeezed out and hence a larger proportion of the weight on the wheel is carried, in effect, on a film of water. This effect can be reduced by drainage channels, such as grooves in the tyre tread or a rough granular surface on the runway, but may be increased by the presence of grease, such as is exuded by certain runway material. Attention is being given to the best way of improving adhesion through changes in tyres and runway surfaces, but there are a number of difficulties to be overcome and it is doubtful if the effect of water can be entirely eliminated. The reasons for the apparent reduction in the coefficient of friction at high speeds on dry surfaces are more complex and less readily explained. In the case of wet ice the coefficient of friction is practically constant but, in the case of dry ice at temperatures near freezing point, it may actually fall as speed is reduced and the ice has more time to melt under pressure of the tyre.

3.4 Summary

The typical variation of retardation with speed, taking all the above factors into account, which can be achieved on a landing is shown in figure 5. The airborne portion from the threshold is shown as a broken line and the ground portion as a solid line. The retardation is the total retardation taking into account the effects described in sub-paragraphs 3.1 to 3.3 and assumes a wet surface and normal, as distinct from emergency, technique for stopping in a short distance. The important points to note are that

- (a) if the aeroplane is held off the runway and touched down below the normal speed, there is a loss in retardation, because airborne retardation is considerably lower than that which can be achieved on the ground and
- (b) the retardation which can be achieved at high speeds is appreciably smaller than at low speeds.

It will be recalled that the larger part of the landing distance is covered at high speed. (sub-paragraph 3.1). It follows from (b) above that quite a small gain in retardation at touch-down speed, such as may be obtained by reducing to a minimum the period of hold-off and braking immediately on touch-down, can result in a substantial reduction in total landing distance and can be worth more than a large improvement in retardation at low speed.

4 OPTIMUM TECHNIQUE

4.1 General

In general, the best technique for stopping an aeroplane in the shortest distance for a given total energy (a combination of speed and height; 10 ft. of height being roughly the equivalent of 1 knot of speed) at the runway threshold, is to touch down at the earliest practical moment after crossing the threshold with as much weight as possible on the main wheels and to apply maximum braking immediately. (This does not, of course, imply that the threshold should be crossed with less than a safe margin of height.) Even on an extremely slippery surface such a technique, if the aeroplane characteristics permit its proper implementation, will give better results than reliance on ordinary "aerodynamic" braking down to a low touch-down speed or to a low nose-wheel lowering speed. It has been explained that most of the landing distance is covered at a fairly high speed (see sub-paragraph 3.1) and that, although the

retardation from the wheel brakes is poor at high speeds, the increase so provided over that obtainable with air drag alone is valuable. Where the aeroplane is fitted with propellers which can be reversed or which produce high aerodynamic drag after touch-down, the importance of not delaying the touch-down is considerably increased as these devices are most effective at high speeds and should not be used before touch-down except in extreme emergency and even then only with the greatest care. As regards high aerodynamic drag before touch-down it should be noted that propeller discing drag is frequently controlled by an undercarriage switch and cannot, therefore, be used before touch-down

4.2 Factors limiting choice of touch-down speed

For some aeroplanes the maximum touch-down speed is limited only by the time required to perform a safe flare out. For others it may be limited by such factors as:-

- (a) the tendency of the nose wheel, if it touches first, to cause the aeroplane to "balloon" off the runway and
- (b) the need for some types of tail wheel aeroplanes to be touched down within a very narrow range of attitudes if "ballooning" or "porpoising" is to be avoided.

4.3 Factors limiting early use of brakes

4.3.1 With non-automatic brakes, which are still fitted to the majority of aeroplanes, it is easy to burst tyres if the brakes are applied at high speed on a dry or "patchy" runway. On a really slippery runway, however, the risk of bursting tyres is small and, subject to maintaining directional control, it is generally preferable on this type of surface to lock the wheels if there is any serious doubt about ability to stop within the runway. It should, however, be noted that there is some evidence that the improvement in braking on an icy surface from sanding of the surface is less with a locked wheel than with a rolling wheel. Although the coefficient of friction is at its highest when the wheels are nearly, but not quite, locked it is impossible to maintain this condition with an ordinary braking system and any attempt to do so may result in reduced braking efficiency.

Note: On some older types of aircraft the brakes may tend to fade towards the end of a long run if used hard from touch-down. For such aircraft it is difficult to give guidance on the optimum technique and this must be established by experiment or from experience.

4.3.2 Consideration of such factors as avoiding wear on the brakes and tyres will, of course, influence landing technique in day to day operations. It is stressed that departures from the optimum technique for stopping in a short distance are only admissible if the distance available under the prevailing conditions is clearly not critical. This question is dealt with at length in sub-paragraph 4.6,

4.4 Methods of increasing the weight on the wheels

4.4.1 Aeroplanes with nose wheels

In the case of aeroplanes with soft nose wheel suspensions it is advantageous to push the control column forward as soon as the nose wheel is on the ground. This increases the weight on the wheels and also increases the directional control of the nose wheel which can be useful when landing on a slippery runway in a cross-wind since it reduces the need for differential braking, use of which decreases the total retardation available. Care should, however, be taken when using such a technique to avoid the situation arising in which the reduction in wing lift is offset by excessive transference of weight to the nose wheel and tailplane. The use of reverse pitch, by disturbing the flow over the wings, provides a most effective way of getting weight on to the main wheels, even if only idling power is used. In that case the elevators should be used in accordance with any instructions for minimizing control snatch. There is, in any case, little to be gained from using the elevators to put the weight on to the main wheels once the propellers have gone into reverse.

4.4.2 Aeroplanes with tail wheels

With some types of aeroplane it is possible to apply the brakes and keep the aeroplane in an almost horizontal attitude without risk of bouncing off or nosing over. Such a technique, by increasing the weight on the main wheels, usually results in a worth while reduction in the landing distance and may have the incidental effect of making the rudder more effective. It should, of course, be borne in mind that the primary effect of getting more weight on to the wheels may be offset by an inability to apply the brakes hard without risk of nosing over and this should govern the extent to which the technique is

used. A tail-high touch-down technique is not feasible on some types of tail-wheel aeroplane, such as the Tudor.

4.4.3 Use of wing flaps

(a) Before touch-down

Unless overriding circumstances such as unusual weather conditions, or special features of the aircraft such as interconnection of the throttles and flaps, make it unwise or impossible, full flap should be applied well before crossing the threshold both in the interests of permitting a lower safe approach speed and reducing the "float" if the energy at the threshold should prove to be too high. In this connection it should be noted that flap handling practice in the air ought to remain consistent as experience has shown that larger variations of approach speed occur where the flap handling is varied with the prevailing conditions. The optimum point for the application of full flap naturally varies with the type of aircraft because of differences in the sensitivity to the use of full-flap.

(b) After touch-down

Once the aeroplane is on the ground the effect of full flap in increasing drag may be outweighed by its influence in reducing the weight on the wheels. With flaps giving high lift for small increases in drag in the take-off position, the gain possible from retraction may be small, since, to satisfy conditions in other phases of flight, the drag will be removed quickly but the lift slowly. In the case of split flaps the effects of the lift and drag are not so clearly separated. With these flaps it may be profitable to select "flaps up" immediately after touch-down provided that the retraction speed is quick enough, there are no inconvenient changes of trim and no risk of raising the undercarriage by mistake.

4.5 Pilot familiarization

Detailed official information on the optimum technique for minimizing the landing roll on slippery runways is not available for most current types, although the introduction of improved requirements for determining landing distances should rectify the deficiency for future types. In the meantime, pilots are recommended to consider the information in this Circular in the light of the handling characteristics of the aeroplanes which they are called upon to fly. It need hardly be stressed that, although it is desirable for pilots to familiarize themselves, by practice landings, with the best technique for dealing with the emergencies of excess threshold speed and slippery runways, these practice landings should be undertaken only at aerodromes with runways adequate for such tests and in co-ordination with Air Traffic Control.

4.6 Relaxation in non-critical conditions

It is noteworthy that the majority of landing accidents have occurred in conditions which were not theoretically critical, even though in some cases adverse factors such as gustiness, wet runways (the most common) or poor visibility were present. There is evidence to suggest that lack of adherence to the best technique in non-critical conditions was an important factor in a significant proportion of these accidents. This may arise because pilots do not appreciate the magnitude of the adverse effect of such factors as wet runways. In this connection it is interesting to note that in recent years none of the accidents due to overrunning on landing in United States' air carrier operations appear to have occurred on dry runways. It should be borne in mind that a runway which may be appreciably longer than the required minimum may prove inadequate if the correct technique is not employed. As a good general rule, unless the runway is patently much longer than will be required, the aeroplane should always be handled, at least down to the point of touch-down, as if the aerodrome were critical. However, this does not imply that a reduction in target threshold speed or height below the normal safe and comfortable minima is acceptable (see sub-paragraph 5.1). Figure 6 illustrates this point and also shows the penalty incurred by the use of "aerodynamic" braking, i.e., holding the nose wheel high instead of lowering it and applying the brakes. It will be noted that, although the use of a tail-down attitude to increase air drag reduces the margin necessary for variation in the coefficient of friction, it increases the margin needed for variation in threshold speed (since the ability to dispose of excess speed is less) and increases the basic distance, the combined effect being to increase the total field length required.

4.7 Optimum techniques for individual types of aeroplane and special circumstances

The techniques recommended in this paragraph are believed, in the light of existing knowledge, to be the most suitable for general application. The special characteristics of a few types of aeroplane may call for different techniques, however, particularly in unusual operating conditions. Considerable research is continuing into the factors affecting landing technique. While this research is most unlikely to result in any general revision of the techniques recommended herein, it may indicate the need for modification in special circumstances or in respect of certain types of aeroplane.

5 THRESHOLD SPEED AND HEIGHT

5.1 The statistics collected for both United Kingdom and foreign operators suggest that the average (i. e. strictly the most commonly occurring) height of the wheels and speed over the threshold are of the order of 20 ft. and 23 knots above the power-off stalling speed in the final approach configuration (Vsl). Wind, turbulence, handling characteristics of the aircraft, etc., may cause noticeable variations from the above values. It is believed that the techniques used by pilots and represented by the above threshold crossing heights and speeds have been largely chosen intuitively. Until further research is carried out and more becomes known on the relationship between safety and final approach technique it is not possible to say whether the technique now being employed by pilots is, in fact, the safest for the currently available landing distances. However, there is evidence that the use of techniques which result in threshold heights and speeds appreciably below 20 ft. and Vsl plus 23 knots is likely to result in undershoot or heavy landing accidents, particularly in the case of the larger aeroplanes. When assessing the optimum technique to use it should be borne in mind that increasing the threshold height has a relatively small effect on the landing distance required, provided that the threshold is not crossed above the point from which use can safely be made of all the available aerodynamic drag before touchdown.

5.2 In emphasizing the importance of using a suitable target threshold speed, it must be borne in mind that there may be a need to vary the target approach and threshold speeds with weight. The landing distance regulations in force for most British aeroplanes presuppose that the target approach and threshold speeds are adjusted with weight so as to represent a constant multiple of the stalling speed. From recent statistics it appears that, in general, pilots do not vary these speeds with actual weight, but select those appropriate to the aircraft's average landing weight. Where the landing weight is restricted to a value substantially below the average by reason of field length, it is advantageous to adjust the target speed accordingly. There is, however, evidence that in some cases, possibly due to the use of constant approach power settings regardless of weight, the threshold speed is increased as weight is reduced. This can result in the aeroplane taking a longer distance to land at low weights than at high weights.

5.3 While the existing mandatory minimum landing distance requirements aim to make some provision for different surface conditions, this can only be achieved within certain limits. It follows that the pilot or operator must take special measures to ensure safety where extreme conditions are known to exist. For example, if a flight is planned to an aerodrome where wet ice conditions are liable to exist, an additional margin of distance above the mandatory minimum will usually be required if adequate safety is to be ensured. Similarly, when the runway surface is wet and only the mandatory minimum landing distance is available it will be necessary for the pilot to abandon an attempt to land if his height and airspeed at the threshold are appreciably in excess of those intended. It is again emphasized that each knot of excess airspeed has, in the case of a typical large piston-engined aeroplane, about the same effect on landing distance as 10 ft. of excess height. They both add about 1.8% to the total landing distance.

6 FUTURE LANDING FIELD LENGTH REQUIREMENTS

Much of the information in this Circular has been obtained in the process of evolving more rational requirements for minimum safe landing field lengths. Such requirements are necessary for the more varied characteristics of future aircraft designs. In addition to providing safe field lengths and showing how aeroplanes and aerodromes may most economically be improved, they will provide more explicit handling information as to how to obtain the safest landing performance from any particular type of aeroplane.

Figure 1.

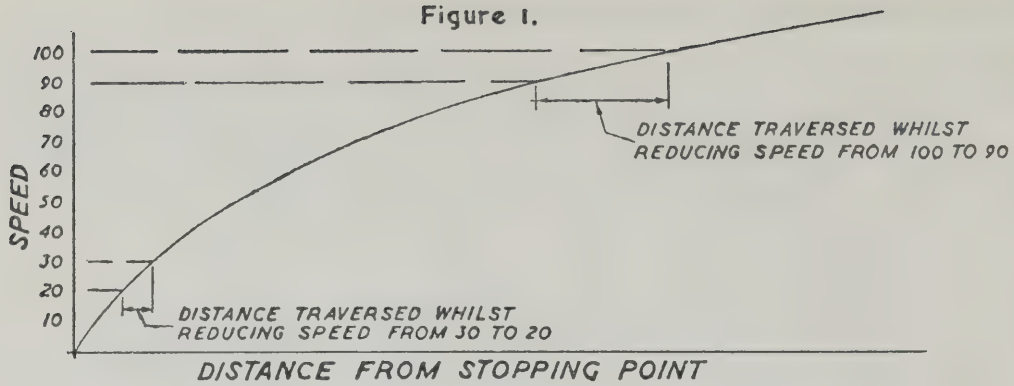


Figure 2.

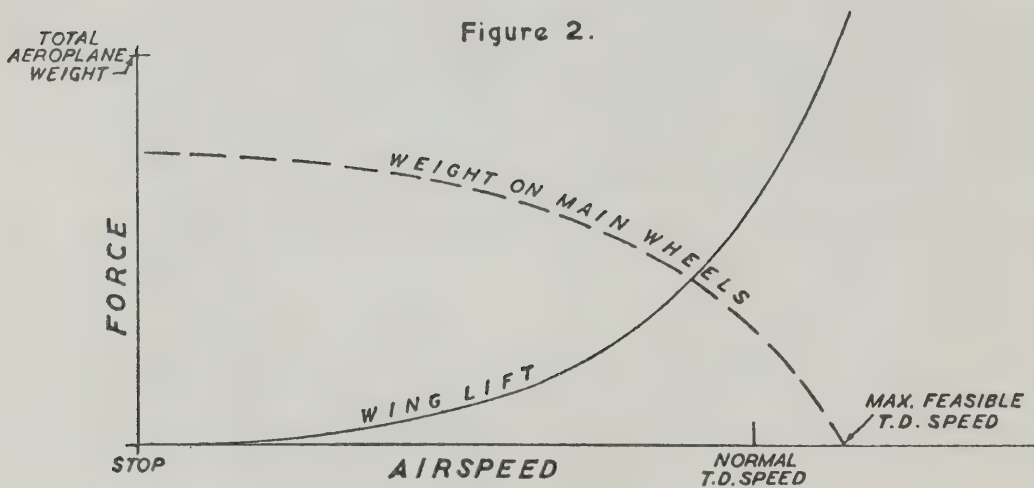


Figure 3.

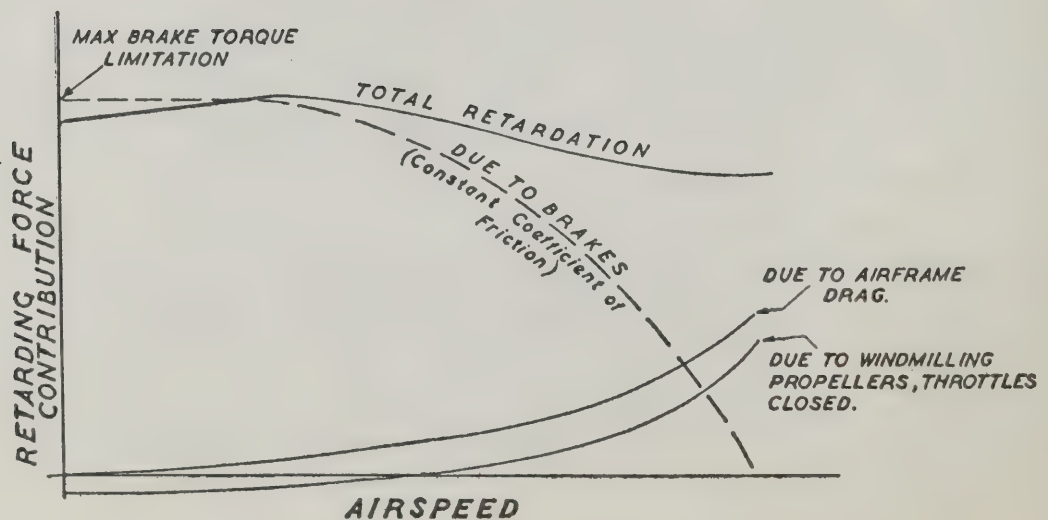


Figure 4

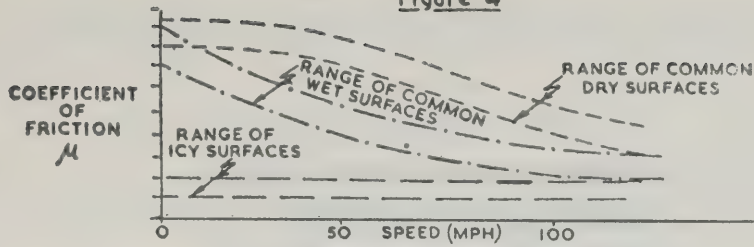


Figure 5

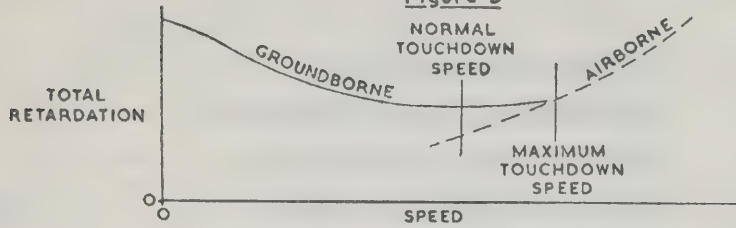
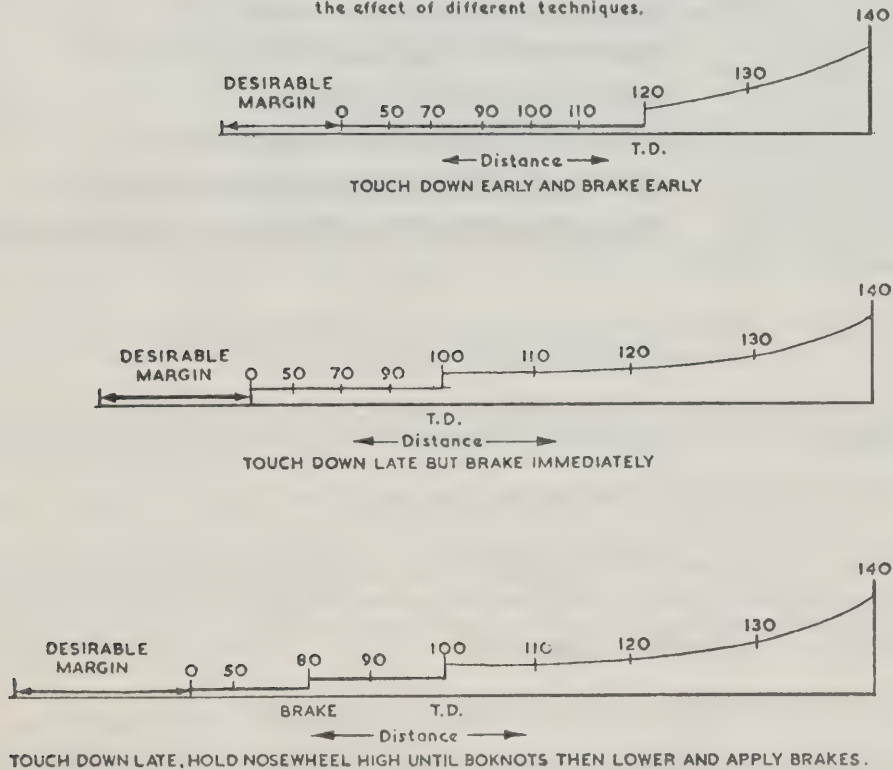


Figure 6

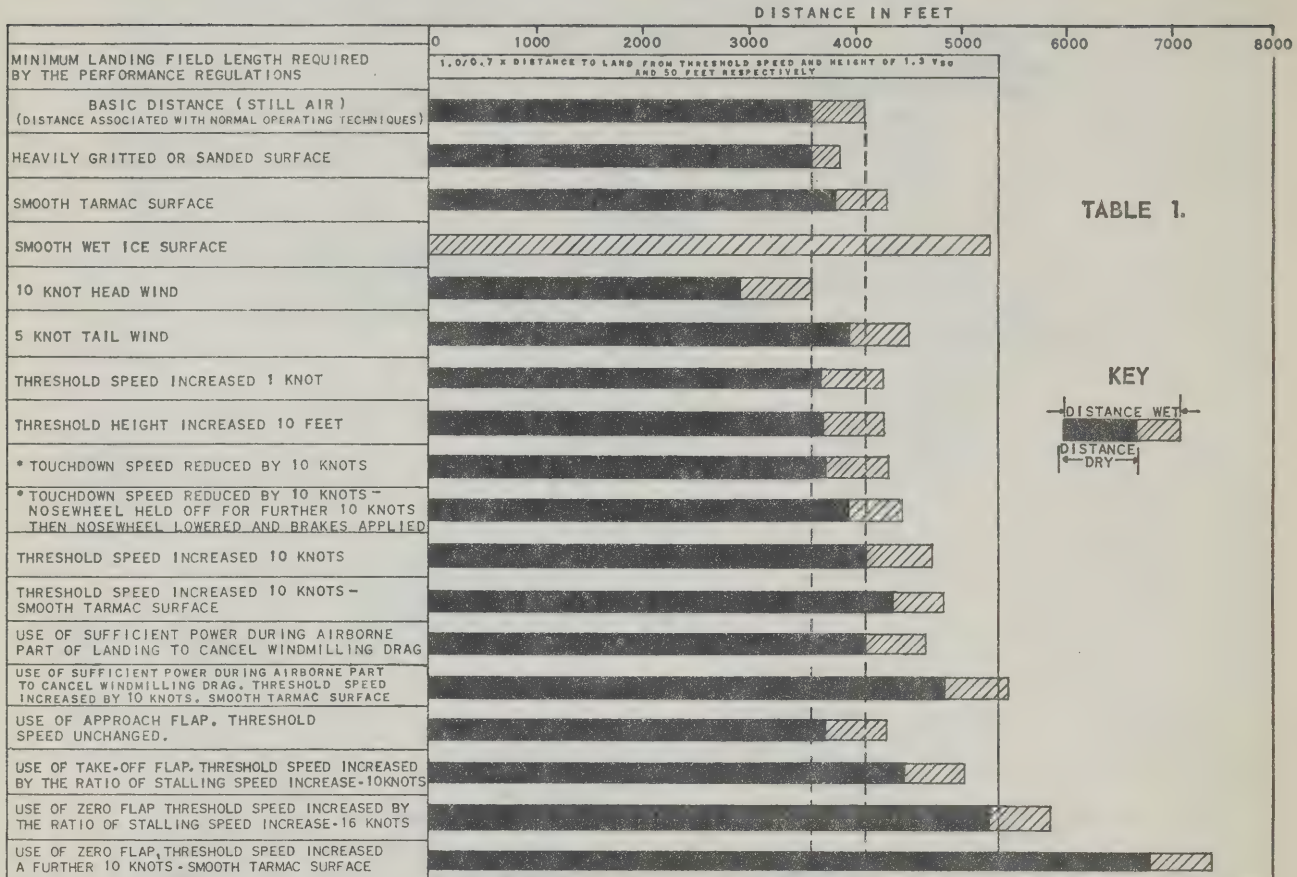
Total landing distance of a typical aeroplane from an approach speed of 140 kts. showing the effect of different techniques.



NOTES:

1. Figures represent speed in knots
2. The "desirable margin" is the extra distance required with the particular technique to ensure that the theoretical risk of overrunning is not greater than 1 in 100,000, taking into account such factors as variations in the runway coefficient of friction and errors in the approach speed.

EFFECT OF VARIOUS TECHNIQUES AND CONDITIONS ON LANDING DISTANCE



* USING NORMAL THRESHOLD SPEED AND PROLONGING HOLD-OFF

M.T.C.A., A.T.6. D.O. DRG. NO. 1849

LANDING SEAPLANES UNDER GLASSY WATER CONDITIONS OR SKIPLANES ON UNBROKEN SNOW

It has been found practically impossible when landing a skiplane or seaplane under certain conditions of surface and light to judge altitude, and the following procedure should be adopted:-

- (a) For a forced landing without engine or normal landing in a small lake.

Should a pilot be forced to land on glassy water or unbroken snow after the engine has failed, a landing should be effected as close to the shoreline as possible and parallel to it, the height of the aircraft above the surface being judged from observation of the shore. Floating objects, weeds and weed beds can also be made use of for judgment of height in the case of the seaplane.

- (b) For a normal landing on glassy water or unbroken snow.

A landing of this kind should seldom be made without the use of the engine. The practice recommended is to make a straight approach down to 300 or 400 feet and then to open the throttle so that the glide is reduced to a relatively small angle. A moderate gliding speed should be maintained under these conditions until the seaplane or skiplane is in contact with the surface. In the case of the seaplane the column should then be eased forward slightly and the throttle pulled back gently so that it does not bounce out of the water. Great care must be taken to maintain a straight glide owing to the danger attending a fast landing on the step of the floats if the aircraft is drifting.

The above procedure should be continually practised so that, in the event of a landing on an ill-defined landing surface, there will be no lack of confidence on the part of the pilot. It may also be pointed out that considerable space is required for the purpose of a power approach and landing as detailed on previous page.

WHITE-OUT

Each winter a number of aircraft accidents occur as a result of pilots flying into white-out conditions and becoming disoriented due to the reduction in visibility, the lack of distinguished features on the ground, and the loss of a visual horizon.

The causes and effects of the phenomenon known as "white-out" may be described as follows:

- (a) overcast white-out - a product of complete cloud cover with light reflection between snow surface and cloud base. Perspective, involving the judgment of distance, is limited to a few feet, but actual horizontal visibility of dark objects is not materially reduced.
- (b) water-fog white-out - produced by thin clouds containing super-cooled water droplets with the cloud base usually in contact with the cold snow surface. Visibility both horizontally and vertically is affected by the size and distribution of the water droplets suspended in the air.
- (c) blowing-snow white-out - produced by fine blowing snow plucked from the snow surface and suspended in the air by winds of 20 knots or more. The suspended grains of snow reflect and diffuse sunlight and reduce visibility.
- (d) precipitation white-out - although all falling snow reduces visibility, small wind-driven snow crystals falling from low clouds, above which the sun is shining, produce a white-out condition. The multiple reflection of light between the snow covered surface and the cloud base is further complicated by the spectral reflection from the snow flakes and the obscuration of landmarks by the falling snow.

Pilots are cautioned not to proceed into areas where, due to white-out, it is not possible to distinguish between ground and sky, unless they are sufficiently experienced, have adequate flight instruments available and have the ability to land using the glassy-water technique.

WINTER OPERATIONS - TAKE-OFF

All pilots should know that an aeroplane is dependent on a smooth uninterrupted flow of air over wings and control surfaces for safe, efficient flights.

Nevertheless, each winter accidents are caused by pilots attempting to take-off in aircraft when the wings and control surfaces are coated with snow, ice or frost.

No pilot should attempt to take-off without having first ensured that both wing and control surfaces are entirely clear and to remember that the slightest accretion of hoar frost might seriously affect the performance capabilities of the aircraft.

SAFETY PRECAUTIONS TO PREVENT MISREADING OF ALTIMETERS

The need for correct interpretation of the altimeter reading during descent from altitudes in excess of 10,000 feet A. S. L. is well known.

It is recommended that the following procedures be adopted for any descent from altitudes above 10,000 feet A. S. L.

- (a) verbal confirmation between captain and 1st officer of cruising level prior to leaving that altitude for the purpose of descent;
- (b) verbal confirmation between captain and 1st officer of descent penetration at the 25,000, 20,000, 15,000, 10,000 and 5,000 feet levels.

IFR APPROACHES TO AIRPORTS NOT EQUIPPED WITH AIR/GROUND COMMUNICATION FACILITIES

Unless it is possible to obtain a current altimeter setting from an agency located within 50 nautical miles of the destination, instrument approach procedures to the following airports should be carried out on the standard altimeter setting (29.92 inches or 1013.2 millibars):-

House Harbour Airport, Magdalen Islands
Port Menier Airport, Anticosti Island
Riviere du Loup Airport, Quebec
Lac des Loups Airport, Quebec
Lynn Lake Airport, Manitoba

All IFR approaches carried out using the standard altimeter setting should not be continued below the "ALTERNATE" minima specified on the appropriate approach chart of the Canada Air Pilot.

REPORTING OF RUNWAY VISUAL RANGE

Runway Visual Range (RVR) is reported, under specified conditions, in the "Remarks" portion of Aviation Weather Reports for certain Canadian civil and military aerodromes equipped with transmissometers. The equipment is installed near the touchdown zone of a runway equipped with a precision approach aid (ILS or GCA).

Prevailing visibility in the vicinity of an aerodrome continues to be reported as at present and is still to be used in the application of take-off and landing weather minima. Runway Visual Range reports are intended to provide an indication of how far the pilot will be able to see along the runway in the touchdown zone and may differ from the prevailing visibility because of the location of the transmissometer or because of the method of measurement. Following a period of test and evaluation it is expected that operating minima will be expressed in terms of RVR for those runways equipped with a transmissometer.

The transmissometer measures the clarity of a horizontal sample of the atmosphere, normally 600 feet long, by continuously measuring the intensity of the light received from a projector of constant output. The measure of clarity of the atmosphere is converted to the reported value of Runway Visual Range, theoretically related to sighting dark objects against the horizon sky in daylight, and the sighting of runway lights (light setting # 3) at night.

Runway Visual Range will be reported whenever prevailing visibility is less than two miles and will be reported in hundreds of feet. A Runway Visual Range of less than 1,000 feet will be reported as 10 -, of more than 6,000 feet as 60+, and as "variable" when fluctuations above or below the reported value equal or exceed 1,000 feet.

Runway Visual Range will be shown as follows:

R27VR16 (Visual range on Runway 27 is 1,600 feet)
R10VR60+ (Visual range on Runway 10 exceeds 6,000 feet)
R05VR10- (Visual range on Runway 05 is less than 1,000 feet)
R10VR28V (Visual range on Runway 10 is 2,800 feet and variable)
RVRNO (Runway visual range not available) - used by a station equipped to measure RVR in conditions when RVR would normally be reported, to indicate that equipment is inoperative, pending issue of a NOTAM announcing interruption of service.

Runway Visual Range as reported by the above procedures may differ on occasion from the distance along the runway that the pilot sees, for a number of reasons. These include differences of visual acuity of individuals, variations in visibility along the runway, and variations due to use of runway lights at different intensity settings. Pilots are cautioned not to consider runway visual range reports as infallible indications of what they will see on touchdown. To assist with the elevation of the program, pilots are requested to report to the local weather office or tower any instances when they observe a runway visual range substantially different from that reported.

SECTION II

ENROUTE HAZARDS

DOMESTIC PILOT REPORTS - "PIREPS"

An expanded PIREPS (pilot reports pertaining to meteorological conditions encountered in flight) program has been implemented by this Department using existing facilities. It is designed to furnish aircraft in flight with up to the minute weather information not readily apparent from forecasts and ground-based weather reports. Meteorological Offices will also benefit from the additional information available for use in forecasts, briefings and aviation weather reports.

All pilots, particularly those on flights below 10,000 feet, are requested to transmit PIREPS to the nearest Radio Range or Beacon station over normal air-ground communications channels. Radio Operators will be encouraged to solicit reports when they are required and not otherwise available.

PIREPS should generally include the time of observation, type of aircraft, altitude, position and Meteorological conditions observed. They should always cover, but not necessarily be limited to, thunderstorms, line of thunderstorms, tornadoes, hail, moderate or heavy turbulence, icing, mountain waves, ceiling or visibility below VFR, and other conditions differing substantially from those indicated in forecasts and surface reports. Reports on any phenomena which might affect the safety or efficient operation of another aircraft or be of interest to Meteorological personnel are encouraged.

PIREPS will be (1) included in the following two scheduled weather broadcasts over Navigational Aid frequency/ies of the station concerned, (2) directed to specific aircraft on air-ground channels when considered appropriate by the Aeradio Station Operator and (3) passed to Meteorological personnel for use, where warranted, in official reports. When reported conditions are considered hazardous to aircraft in flight, a special broadcast will be made by the Radio Range or Beacon station immediately upon receipt.

USE OF RAILROADS, ROADS, RIVERS, POWERLINES, PIPELINES ETC., AS NAVIGATIONAL AIDS

Aircraft using the subject ground features as navigational aids are warned to keep well to the right of such routes in order that the risk of collision may be reduced.

RESTRICTED FLIGHT VISIBILITY - CONTROL ZONES

Incidents have occurred where aircraft are being operated VFR within control zones when the flight visibility is restricted below 3 miles due to a local smoke, haze, rain, snow, fog or other conditions.

The VFR Weather Minima Order, (Air Navigation Order, Series V, No. 3) requires 3 miles ground visibility for VFR flight within a control zone. This visibility is, of course, taken by a person on the ground and does not preclude the possibility that due to some restriction the visibility aloft may be less.

Good airmanship requires that a pilot encountering less than 3 miles flight visibility within a control zone will either

- (a) fly a course that will keep the aircraft clear of the area of reduced visibility, or
- (b) remain clear of the area of reduced visibility and request a clearance from air traffic control.

VISUAL LOOK-OUT - VICINITY OF AIRPORTS

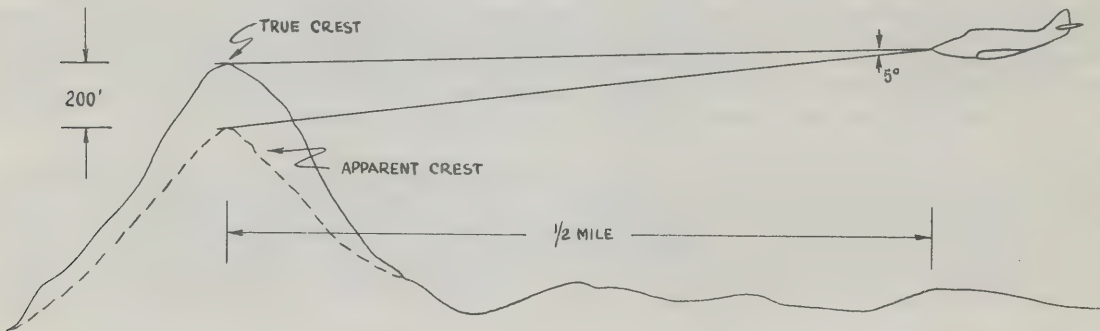
The volume of air traffic and the higher airspeeds of some aircraft call for extreme vigilance on the part of the pilot in order to minimize the possibility of mid-air collisions.

While the rules setting forth the altitudes to be flown during en route flight provide an appreciable measure of safety, it is within the vicinity of those airports having a high concentration of air traffic that a sharp look-out is more than ever necessary.

All pilots are therefore cautioned to maintain a sharp look-out for other aircraft when operating in the vicinity of airports and to remember that during visual flight weather conditions it is the pilot's responsibility to maintain adequate separation from other aircraft.

FLIGHT IN RAIN

An error in vision can occur when flying in rain. The presence of rain on the windscreen, in addition to causing poor visibility, introduces a refraction error. This error is due to two things. First, the reduced transparency of the rain covered windscreen which causes the eye to indicate a horizon below the true one (because of the eye response to the relative brightness of the upper bright part and the lower dark part) and second, the shape and pattern of the ripples formed on the windscreen, particularly on sloping ones, which cause objects to appear lower. The error may be present as a result of one or other of the two causes, or of both, in which case it is cumulative, and is of the order of about 5° in angle or about 1 in 12. Therefore, a hilltop or peak one half mile ahead of a plane could appear to be 200 feet lower as illustrated below.



Pilots should, therefore, bear in mind this additional hazard which exists when flying in conditions of low visibility in rain and should maintain sufficient height and take other precautions as necessary to allow for the presence of this error, to ensure proper terrain clearance during enroute flight and on final approach to landing.

Tests have shown that these errors can be reduced and vision improved by the use of rain repellent. Persons desiring further information regarding the use of rain repellants may obtain such information by writing to the National Research Council, Division of Applied Chemistry, Ottawa, Ontario.

TURBULENCE IN THE WAKE OF AIRCRAFT

Pilots of light aircraft should be aware of the potential hazard created by large aircraft in the form of trailing vortices. Light aircraft have been involved in accidents and near-accidents as a result of flying through this disturbance inadvertently. For this reason, it is recommended that, in the interest of safety, the following precautions be taken:

- (a) Avoid, when possible, places and altitudes frequented by large aircraft.
- (b) Do not take off, land or cross the wake of a large aircraft without allowing ample separation. As a working rule, allow at least 2 minutes.
- (c) If you are to cross the path of a large aircraft, change altitude if necessary so as to cross at least 100 feet higher or lower, preferably higher, and at a reduced airspeed.
- (d) If you get into a bad vortex, the best procedure is to use a minimum of control movements to preclude overstressing the aircraft.

Trailing vortices, a disturbance similar to severe turbulence, are created predominantly by the aircraft wings. This disturbance is sometimes thought to be the result of the wake due to the propeller or, in the case of a jet aircraft, the wake due to the jet exhaust. The effect of so-called "prop-wash" is insignificant as tests which have been conducted discount the effect of "prop-wash" at a distance of approximately 1,000 feet and the wake due to the jet exhaust at a distance of only a few hundred feet.

The intensity of the vortices is directly related to span loading. Hence, a practical generalization is that the bigger and more heavily loaded an aeroplane is, the more violent and long lived the vortex disturbance will be. The intensity of the trailing vortices is even greater when the aircraft shedding them is flying at relatively slow speeds as after take-off and when approaching to land.

Trailing vortices can cause large and uncontrollable rolling motions when following or crossing the wake at small angles. Following a large aircraft too closely on take-off and when approaching to land can result in loss of control at too low an altitude to effect recovery from the resulting abnormal attitude. Forces encountered when traversing a pair of vortices at large angles (approaching 90°) are "up-down-down-up" and can be great enough to cause structural failure of light aircraft. Vortices of such destructive magnitude are generally associated with large transport type aircraft.

The intensity of the airloads felt also depends upon the speed of the aircraft flying through the vortices. For example, at $\frac{1}{2}$ the speed, the shock would be $\frac{1}{4}$ as great.

It has been found that trailing vortices stay close together and parallel as a pair. The deterioration being gradual and slow, the vortices can remain dangerous for periods of up to 2 minutes after being shed. In this regard, it should be noted that the vortices can remain dangerous until the aircraft shedding them is out of sight. For instance, at 300 mph, an aircraft will travel 10 miles in 2 minutes.

ICE FALLING FROM AIRCRAFT

It has been reported that large pieces of ice have fallen from aircraft. There is evidence that water discharged through the wash basin and galley drains may freeze on contact with the cold airframe just aft of the outlet. An ice build-up may then occur which will break off in a solid lump when the aircraft descends into less cold air.

Air carriers should take note that neglect of precautions against creating a hazard to persons or property on the ground or water by dropping anything from an aircraft in flight, is in contravention of Section 507 of the Air Regulations, which states:

"No person shall create a hazard to persons or property on the ground or water by dropping anything from an aircraft in flight."

DRY ICE - SAFETY PRECAUTIONS

The agreement with international air carriers and other commercial organizations for the carriage of restricted articles by air requires that each package containing dry ice must be plainly marked "ORA, GROUP A - DRY ICE" and that advance arrangements between shipper and carrier must be made for each shipment.

Should dry ice be carried in the same compartment as the passengers either as a refrigerant or part of the cargo it is recommended that the passengers and crew evacuate the aircraft during all extended stops unless provision is made for adequate ventilation of the passenger and crew compartments during this period.

The need for caution arises because dry ice releases carbon dioxide in a gaseous form. A low concentration of this gas produces subjective symptoms from a desire for fresh air to an intense feeling of suffocation with possible impairment of vision. A high concentration may result in loss of consciousness or death.

POTENTIAL HAZARD - PORTABLE COMBUSTION HEATERS

Portable combustion heaters are a potential hazard and should not be used on board aircraft in flight.

All combustion heaters, including catalytic heaters, consume oxygen and, under certain conditions, produce carbon monoxide.

Any excessive reduction in oxygen content or any excessive amount of carbon monoxide in the confined space of an aircraft cabin might seriously affect the safety of flight.

HIGH ALTITUDE FLIGHT IN AIRCRAFT WITH NON-PRESSURIZED CABINS

The effect of high altitude flying on pilots or other crew members in non-pressurized aircraft is well known. It is not possible at this time to arrive at a top permissible operating altitude but recent discussions with civil medical advisors from other countries indicate that at altitudes in excess of 30,000 feet, there have been fatalities directly attributable to the prolonged effect of anoxia.

It is also reported that high altitude photographic work in aircraft with non-pressurized cabins has been conducted successfully at altitudes of 36,000 feet. In order to determine a maximum altitude which may be used, there are many factors which must be considered, such as the type of aircraft used, the oxygen installation and the type of oxygen mask used, the type of operation and the time of operation at these altitudes, the age and physical condition of the pilot, the amount of instruction in regard to anoxia and decompression sickness, etc.

Since there is insufficient evidence and unanimity among experts to justify the setting of a maximum ceiling for civilian flying in aircraft with non-pressurized cabins, it is desired to inform all persons connected with high altitude operations that there is an increasing hazard as operational altitudes approach 35,000 feet. The aircrew and operator should, therefore, be familiar with the various factors involved in high altitude flying, such as oxygen requirements and equipment, emergency bail-out, decompression sickness (bends and chokes), and fatigue.

With regard to oxygen equipment, although a safety factor may be included in the equipment, this may be exceeded by a mask that leaks. Therefore it is desirable that flight above 30,000 feet in a non-pressurized cabin should be made with an oxygen regulator which will supply a "safety pressure" of 1 to 1½ inches of water. This "safety pressure" prevents inboard leakage and consequent dilution of 100 per cent oxygen required at altitudes above 30,000 feet. It is recommended that operators engaged in high altitude work with non-pressurized cabins use:

- (a) A-13-A mask with A-2 disconnects and Bail-Out Bottles;
- (b) A-14, D-1 or 2862 series of Pressure Dilutor Demand Regulators;
- (c) "safety pressure" at altitudes above 30,000 feet.

With regard to decompression sickness (bends or chokes), there will be a certain incidence in operations above 30,000 feet. It is recommended that personnel operating at these altitudes should pre-breathe 100 per cent oxygen before flight and should climb to altitudes using 100 per cent oxygen. It is further recommended that personnel undertaking this high altitude work should be warned to descend immediately if any evidence of "bends" or "chokes" occurs.

Duration of flight and fatigue at these altitudes are very important factors.

Pressurization of the aircraft cabin reduces the hazards for the aircrew in operations requiring altitudes of 30,000 to 40,000 feet. A cabin pressure differential of one pound per square inch at flight altitude of 35,000 feet would give a cabin altitude of approximately 30,000 feet.

SECTION III

SPECIAL OPERATING PROCEDURES

WINTER OPERATIONS - WHEEL-EQUIPPED LIGHT AIRCRAFT

During the course of each winter a number of aircraft accidents have occurred due to pilots attempting to land wheel-equipped aircraft on surfaces covered with deep snow. This has almost invariably resulted in the aircraft nosing over. In addition to the damage to be expected as a result of such an accident, the danger to the occupants is obvious.

Light aircraft should not be landed on surfaces covered with snow unless it has previously been determined that the amount of snow will not constitute a hazard.

USE OF SEAPLANES ON SNOW SURFACES

The use of float-equipped aircraft or flying boats from snow covered surfaces will be permitted by the Department under the following conditions:

- (a) The pilot and operator shall be held responsible for confining all flights to those snow conditions found to be satisfactory as a result of previous test or experimental flights in that type of aircraft.
- (b) Passengers shall not be carried.
- (c) A thorough inspection of the float or hull bottom shall be made immediately after every flight and, in addition, all struts and fittings, all wing fittings and bracing and wing tip floats and fittings shall be inspected.
- (d) The operator shall notify the Regional Superintendent, Air Regulations, of any intended use of seaplanes for operation on snow surfaces.

Seaplanes should not be landed-on or taken-off from snow surfaces except under conditions of deep firm snow, which should not be drifted or heavily crusted.

Flights should not be attempted if there is any adhesion of ice or snow to the under surface of the float or hull.

SINGLE-ENGINEED AIRCRAFT OPERATING IN NORTHERN CANADA

All single-engine aircraft flown north of a line commencing at Latitude 68°00' North, Longitude 136°00' West; thence to Churchill, Manitoba; thence to Latitude 58°42' North, Longitude 63°00' West, shall be equipped and operated in accordance with the requirements set forth in the attached schedule.

These requirements are necessary to ensure a minimum standard of operation consistent with the ordinary good practice of the air as required by the Air Regulations.

It is the responsibility of the operator to make his own arrangements with regard to fuel, accommodation and supplies and, persons intending to land at any Distant Early Warning Station must obtain prior clearance from the Department of National Defence.

This instruction does not apply to helicopters.

SCHEDULE

(1) Single-engine aircraft operating north of a line commencing at Latitude 68°00' North, Longitude 136°00' West; thence to Churchill, Manitoba, thence to Latitude 58°42' North, Longitude 63°00' West shall, in addition to emergency equipment required by the Flight Precautions in Sparsely Settled Areas Order (A.N.O. Series V, No. 12) carry the following equipment:

- (a) TELECOMMUNICATIONS EQUIPMENT
 - (i) HF radio (with a minimum output of 30 watts) capable of transmitting and receiving on 5680 kcs., and

- (ii) a portable emergency transmitter capable of operation on the ground independently of the aircraft battery and of transmitting on a distress frequency or frequency used by the RCAF for Search and Rescue purposes.

(b) NAVIGATION EQUIPMENT

- (i) a gyro-stabilized magnetic compass, or
- (ii) an astro compass and a low precession gyroscopic direction indicator.

NOTES: - If an astro compass is carried it shall be accompanied with the necessary tables and the operator shall be proficient in its use.

- Telecommunications equipment must be adequate to ensure compliance with the Security Control of Air Traffic Order, (A. N. O. Series V, No. 14).
- The frequency 5680 kcs. is for emergency communications only and its use is to be restricted in accordance with Information Circulars.
- If it can be shown to the satisfaction of this Department that an aircraft is otherwise satisfactorily equipped, then the requirements set forth above may be modified for flights in the area south of the Arctic Archipelago.

(2) A Flight Notification or a Flight Plan shall be filed in accordance with the requirements of the Flight Plans and Flight Notifications Order (A. N. O. Series V, No. 4).

(3) Operators proceeding to the Arctic Archipelago, shall meet with the following additional requirements:

(a) TELECOMMUNICATIONS EQUIPMENT

- (i) VHF radio capable of transmitting and receiving on 121.5 mcs and 122.2 mcs.
- (ii) an Automatic Direction Finding Radio Compass or manually operated Loop.

(b) ROUTES - When proceeding to and returning from the Arctic Archipelago, one of the following routes shall be followed:-

- (i) Fort Smith, Hay River, Providence, Fort Simpson, Wrigley, Fort Norman, Norman Wells, Fort Good Hope, Red River, Inuvik, Tuk Tuk;
- (ii) Fort Smith, Yellowknife, Sawmill Bay, Lady Franklin Point;
- (iii) The Pas, Ilford, Churchill, Baker Lake or Chesterfield Inlet, Coral Harbour, Hall Lake;
- (iv) SEAPLANES ONLY - The Pas, Lynn Lake, Ennadai, Baker Lake, Gjoa Haven;
- (v) SEAPLANES ONLY - Rupert House, East Main, Old Factory, Fort George, Great Whale, Lac Bienville, Knob Lake, Fort Chimo, Payne Bay, Frobisher;
- (vi) Sept-Iles, Ross Bay, Knob Lake, Fort Chimo, Payne Bay, Frobisher.

NOTE: - In choosing the most suitable route it must be remembered that under Section 538 of the Air Regulations, no single-engined landplane shall be operated on a commercial air service over water beyond gliding distance from shore except as authorized by the Minister.

(c) FUEL

Unless it is demonstrated to the satisfaction of this Department that adequate arrangements have been made for en route refuelling sufficient fuel shall be carried to ensure a minimum range of 500 statute miles plus 45 minutes at normal cruising speed. This fuel restriction applies only to the flight to and from the Arctic Archipelago.

(d) EMERGENCY EQUIPMENT

In addition to the emergency equipment detailed in the Flight Precautions in Sparsely Settled Areas Order (A. N. O. Series V, No. 12) and Information Circulars it is strongly recommended that flares, a small stove or heating device and sleeping bags to accommodate all persons on board the aircraft, be carried at all times.

(e) FLIGHT NOTIFICATION OR FLIGHT PLAN

Three Flight Notifications shall be filed with an Air Traffic Control Unit; the first, at the commencement of the northbound flight; the second, at the last communications base prior to penetrating the Arctic Archipelago; the third, at the first communications base prior to commencing the southbound flight. A VFR or an IFR Flight Plan may be filed in lieu of a Flight Notification if the flight is a non-stop flight which commences and terminates at a communications base.

- NOTES: - Each Flight Notification or Flight Plan shall be closed with an Air Traffic Control Unit; the first, on completing the northbound flight; the second, at the first communications base after leaving the Arctic Archipelago; the third, on completing the southbound flight.
- The Flight Notification to be filed at the last communications base prior to penetrating the Arctic Archipelago shall include the geographical area to be explored.
 - Where a Flight Notification is filed with an Air Traffic Control Unit the pilot-in-command shall report his arrival to the appropriate Air Traffic Control Unit within twenty-four hours of the time indicated on the Flight Notification.
 - Where a VFR or an IFR Flight Plan is filed in lieu of a Flight Notification the pilot-in-command shall report his arrival to the appropriate Air Traffic Control Unit within thirty minutes after landing.

OPERATING REQUIREMENTS FOR SEAPLANES WITH EXTERNAL LOADS

GENERAL

Aircraft approved for the carriage of external loads under Part II, Chapter 1, Para. 1.6 of the Engineering and Inspection Manual shall be operated in accordance with the approved Aeroplane Flight Manual (or other approved documents) and with the following special requirements.

LIMITING WEATHER CONDITIONS

Aircraft with external loads attached shall operate under Visual Flight Rules, Day Flying only.

Pilots, whenever practicable, should avoid flying through areas where turbulence may be expected.

PERFORMANCE

Take-Off. It shall be possible to reach a height of fifty feet (50') in eighty per cent (80%) of the available take-off distance and thereafter to clear all obstacles by a vertical distance of fifty feet (50').

Landing. It shall be possible to clear a fifty foot (50') obstacle at the approach end of the landing surface and reduce speed to approximately three miles per hour (3 m. p. h.) in eighty per cent (80%) of the available landing distance.

OPERATING LIMITATIONS

The pilot shall adjust the take-off weight of the aircraft to provide a safe margin of performance for the existing operating conditions, considering the take-off and landing areas, altitude, temperature, weather conditions and terrain.

Subject to the following restrictions, which are additional to those above, external loads exceeding the dimensions or weight shown on the Aircraft Type Approval may be carried provided:

- (a) The maximum gross weight approved for "external load carriage" is not exceeded.
- (b) No persons are carried on board other than the minimum crew required for the safe operation of the aircraft.
- (c) An entry is made in the Journey Log Book, giving nature, dimensions, positions and weight of load. The entry shall be made prior to the flight.

These restrictions do not apply to the carriage of marine craft. Where marine craft are carried they must not exceed the weight, dimensions or positioning shown in the approval.

OPERATING REQUIREMENTS FOR CIVIL AIRCRAFT EMPLOYED ON PARACHUTE JUMPING ACTIVITIES WITHIN CANADA

The interest in the sport of parachute jumping within Canada, makes it essential that aircraft operators be aware of their responsibilities when engaged in flying parachutists up to jump height.

Aircraft operators participating in this sport should ensure that:

- (a) The parachute jump position in the aircraft is free of dual controls;
- (b) Aircraft exit facilities are provided that will permit a safe and clear exit for the parachutist and his equipment;
- (c) Static line jumps are not permitted without a crew member in addition to the pilot on board the aircraft in order to assist the parachutist or pilot in the event of an emergency and;
- (d) No pilot should allow a parachutist to make or attempt to make a parachute descent into an area where such a descent may be deemed a hazard to persons or property on the ground or water.

It is strongly recommended that all pilots participating in this sport should be conversant with the information contained in the Basic Rules and Safety Regulations of the Parachute Club of Canada. These rules and regulations can be obtained by writing to the President, Parachute Club of Canada, c/o Royal Canadian Flying Clubs Association, 2277 Riverside Drive E., Ottawa 8, Ontario.

CONTROL OF FLIGHT TESTS

DEFINITION

A FLIGHT TEST is defined as the operation of aircraft in flight for the purpose of experiment or for the testing, observing, or measuring of the performance of an aircraft, airframe, engine, propeller or electronic equipment after manufacture, installation or major alteration, except during take-off, landing and operating to and from the area authorized for such flight tests.

INTRODUCTION

The flight test areas heretofore designated for use by aircraft engaged in test flights are hereby cancelled. This action has been taken in view of the limited use which was being made of these areas. In future, pilots of aircraft engaged in flight tests are to exercise the precautions listed hereunder to reduce collision hazard.

FLIGHT TEST PROCEDURE

Pilots engaged in flight tests should:

- (a) select a suitable area outside controlled airspace over water or other sparsely populated area having little air traffic in which to conduct the tests,
- (b) advise Air Traffic Control of the area selected, the nature of the tests and request radar surveillance, if available (ATC may direct a pilot to a more suitable area),
- (c) ensure that there are no other aircraft in the vicinity before proceeding with a particular manoeuvre,
- (d) keep a continuous lookout,
- (e) ensure that the visibility and proximity to cloud are such as to permit adequate warning of other traffic,
- (f) ensure that at least one crew member is available at all times during the flight to maintain a continuous lookout if the flight test in question requires unusual pre-occupation within the cockpit.

AIR SHOWS

An Air Show is considered to be any aerial display or demonstration involving one or more aircraft and to which the public have been invited through the medium of the press, radio, posters etc.

No Air Show may be conducted at any civil aerodrome except with the authorization of the appropriate Regional Director, Air Services of the Department of Transport. The organizers of an Air Show to be held at a civil aerodrome should make application to the appropriate Regional Director at least thirty days in advance of the proposed event.

It is emphasized that any aerial display or demonstration to which the public is not invited is not considered to be an Air Show and any such event must be conducted strictly in accordance with the Air Regulations.

The Air Show Handbook provides all the necessary information pertaining to Air Shows and is recommended to the organizers of these events. Copies of the Handbook may be obtained at any Regional office of the Civil Aviation Branch of the Department of Transport.

INTENTIONAL SPINNING PRACTICE

Intentional practice spins conducted at a very low altitude have resulted in fatal accidents.

Recovery from spins is to be carried out in future at an altitude of at least two thousand feet above the ground, in order that accidents from this cause may be prevented.

SIMULATED ENGINE FAILURE

Instruction in simulated engine failure of large multi-engined aircraft at low altitude can be hazardous. Accidents have occurred during such manoeuvres and the aircraft have been destroyed.

The practice of, or instruction in, emergency procedures shall be restricted to training flights or pilot check flights and under no circumstances may such emergency procedures be initiated while the aircraft is over a city or thickly populated area, except at such an altitude as will enable the aircraft to alight outside such area should the remaining means of propulsion fail.

Failure to comply with these requirements may result in action being taken under Part V, of the Air Regulations.

HEALTH HAZARDS ASSOCIATED WITH CROP DUSTING AND SPRAYING OPERATIONS

GENERAL WARNING

Poisoning can occur as a result of improper handling of the chemical products used in aerial spraying and dusting. The information and precautions contained on the manufacturer's label should always be read and followed and in addition the following general precautions should be adhered to.

PROTECTIVE MEASURES

Since poisoning can occur in several ways, persons handling chemical products known to be poisonous should take precautions to protect themselves from poisoning by:

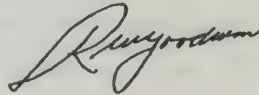
- (a) INGESTION - Avoid eating, drinking, smoking or chewing when handling poisonous products.
- (b) INHALATION - Take care not to inhale dust, mist or emulsion spray containing dusting or spraying poisons. Use of a suitable protective mask is recommended.
- (c) SKIN CONTACT - Cover the body as completely as possible and wear gloves at all times. If clothing becomes contaminated it should be replaced and cleaned. Many of these poisons are irritating to the eyes and some of the organic phosphates acutally weaken visual acuity. Goggles should be worn if there is a possibility of an appreciable concentration of dust or spray in the cockpit.

INSTALLATIONS AND OPERATIONAL PRECAUTIONS

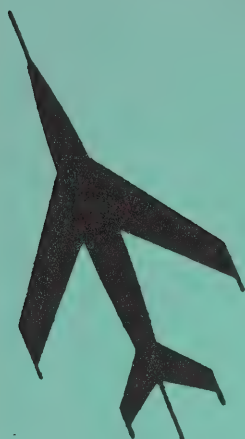
- (a) Tanks and hoppers should be carefully sealed. Aircraft vents should be so located as to make impossible a return of dust or spray into the aircraft and adjusted to provide adequate ventilation at all times.
- (b) Engines should be shut off and the pilot actually away from the aircraft during loading with insecticide.
- (c) Aircraft and cockpit should be cleaned frequently.
- (d) Flying through dust or spray from a previous run should be avoided.

MEDICAL TREATMENT

If pilots or ground personnel experience any unusual physical symptoms which might be attributed to the chemical compounds being used, they should leave the area of exposure and seek medical advice at the nearest Hospital or local Poison Control Centre without delay.

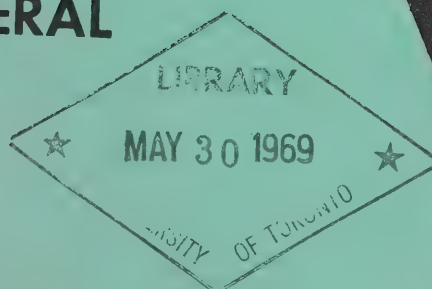


R. W. Goodwin,
Director, Civil Aviation.



INFORMATION CIRCULAR

GENERAL



GENERAL

DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



General

0/30/64
21st December

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

GENERAL

(Superseding Information Circulars 0/36/34, 0/7/46, 0/14/50, 0/32/52, 0/59/52, 0/63/52, 0/15/54, 0/16/55, 0/13/56, 0/7/58, 0/33/58, 0/1/59, 0/20/59, 0/5/60, 0/12/60, 0/18/60, 0/48/60, 0/43/61, 0/1/62 and 0/14/63.)

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SECTION I

CONSERVATION LAWS

GAME REGULATIONS - PROVINCE OF MANITOBA

Prior to the 22nd of April, 1950, Section 64 of the Games and Fisheries Act of the Province of Manitoba prohibited the carriage of a loaded fire-arm in or on, or discharge of the same from an aircraft.

On the 22nd of April, 1950, this section was amended by adding a subsection as follows:

"(7) Notwithstanding subsection (1), the Director of Game and Fisheries, with the approval in writing of the minister, may issue special permits to residents of the province to carry loaded fire-arms in, or on, or to discharge them from, an aircraft or vehicle or horseback for the purpose of hunting timber wolves, coyotes, or foxes in such areas, and subject to such terms and conditions, as may be prescribed in the permit."

FUR FARMS

The Department has been approached on several occasions by the fur breeding industry with a view to obtaining co-operation in regard to the prevention of low flying over fur farms. This is, it is claimed, liable to cause loss and damage, especially during the spring breeding season.

The Department has taken the view that so long as there is no distinguishing mark by which fur farms might be identified, it is difficult for pilots to recognize them and has suggested that the watch towers might be painted chrome yellow and black and that, in addition, a red flag should be flown from a low mast on the tower to aid the pilot to identify the farm.

Where watch towers do not exist, the erection of pylons at least twenty feet high, similarly painted to identify the farm, has been suggested.

Pilots are, therefore, warned that any location so marked should be avoided and that during the months of February, March, April and May, special vigilance should be maintained.

CARIBOU HERDS - NORTHERN CANADA

A mammalogist of the Canadian Wildlife Service of the Department of Northern Affairs and National Resources working in Keewatin District has reported the possibility that aircraft are low flying over herds of caribou.

If these reports are true, the results could have serious consequences to the reduced caribou population. The caribou is still the chief source of food and clothing for a large proportion of the natives in northern Canada. Between 1949 and 1955, the number of caribou dropped from approximately 670,000 to 280,000, a decline of more than fifty per cent in six years. Mammalogists of the Department of Northern Affairs and National Resources are carrying out studies to try to determine the reason for the reduction. A large scale predator control programme has been initiated.

Flight of aircraft at low altitude over caribou herds may cause considerable harm. It could increase accidents resulting in broken bones. The exhausted and disorganized animals would be more susceptible to attack by wolves; their feeding is interrupted and normal herd movement may be seriously disrupted. It is considered that all pilots flying in the north country realize the importance of the caribou in relation to the native welfare and the co-operation of all is requested in eliminating any action which might lead to unnecessary losses of these valuable animals.

FOREST FIRES

Tests have proved conclusively that forest fires can, and sometimes do, originate from burning materials, including cigars and cigarettes, dropped from aircraft in flight.

The co-operation of all aircrew is requested in order to prevent the enormous losses which this country sustains every year through forest fires.

FIRE DETECTION - NORTHERN AREAS

The Department of Northern Affairs and National Resources have requested the co-operation of all persons connected with aviation, in the prevention, detection and suppression of fires in the northern areas of Canada.

If smoke or other indications of fire are seen in any area, the local Forestry Warden, Game Management Officer, or member of the R. C. M. Police should be notified at once. If they are not available the fire should be reported by collect telegram or telephone call to:

- (a) Superintendent of Forestry, Fort Smith, Northwest Territories, for fires in the Northwest Territories and Wood Buffalo National Park.
- (b) Superintendent of Forestry, Whitehorse, Yukon Territory, for fires in the Yukon Territory.

Reports should give size and location of fire and name and address of person making report. This information will assist fire crews in getting to fires with a minimum of delay and with the right type of equipment.

The Department of Northern Affairs and National Resources would appreciate the co-operation of all concerned in assisting in the control and prevention of forest fires in the Northwest Territories.

TRAVEL PERMIT REGULATIONS - PROVINCES OF BRITISH COLUMBIA, SASKATCHEWAN, ONTARIO, QUEBEC, NOVA SCOTIA

BRITISH COLUMBIA

Section 120 of the B. C. Forest Act is as follows:

- (1) Where hazardous conditions exist, the Minister may declare the area a closed district, and no person shall enter or be in such area for the purpose of travelling, camping, hunting, fishing, recreation, prospecting, or the like without a permit, and no operation specified in that closure order shall be carried on without a permit. The Minister may by a further order cancel the closure. The section does not apply to permanent residents or land-owners gaining access to their property, a person travelling along the public highway, or to any operation not specified in the order. The onus of proof that the person did not know of the closure is on the person charged with violation of the closure order.
- (2) In any closed district the Forest Officer may take such action as he considers necessary to extinguish fires and may summon male persons between the ages of 18 and 65, except persons specially excepted under this section, to work under his discretion to control and extinguish the fire.
- (3) The penalty for violation of subsection (1) and (2) is a fine of \$25 to \$300, and each day's carrying-on of the operation is a separate offence.

SASKATCHEWAN

Sections 53 and 54 of the Prairie and Forest Fires Act are as follows:

Section 53 -

- (1) During periods of high fire hazard the Minister may by order declare that no person shall enter upon or travel in the area of forest land described in the order without the written permission of an officer of the department.
- (2) Every person found in an area in violation of subsection (1) is guilty of an offence and liable on summary conviction to a fine of not less than \$10 nor more than \$100 and in default of payment to imprisonment for a term of not less than ten nor more than thirty days.

Section 54 -

The Minister or any officer or other person duly authorized by him may issue a travel permit authorizing any person to enter upon forest land for the purpose of travelling, camping, fishing or picnicking or any other purpose. The authority conferred by a permit shall be exercised subject to the regulations and to such conditions as may be prescribed by the Minister. Every permit shall be subject to revocation by an officer of the department.

ONTARIO

In those sections of the Province of Ontario designated Travel Permit Areas no person may legally enter or travel or set out fire without having first obtained a Travel Permit.

Travel Permits may be obtained from the District Offices of the Department of Lands and Forest located at Pembroke, North Bay, Sudbury, Chapleau, Gogama, Cochrane, Kapuskasing, Sault Ste. Marie, Geraldton, Port Arthur, Fort Frances, Kenora, Sioux Lookout, Swastika and White River. In addition there are numerous other Ranger Stations at which these Permits may be obtained.

QUEBEC

Section 144 of the Quebec Lands and Forests Act is as follows:

"The Lieutenant-Governor in Council may, whenever he deems it necessary for the protection of a region declared to be a fire district, require that everyone wishing to enter or travel about in such region, between the 1st of April and the 15th November, shall previously obtain a permit. Such permit, called "travel permit", may be obtained, gratuitously, from the fire-ranger of the place or from any other authorized person.

The Minister may; when he is of opinion that weather conditions so require, prohibit or restrict traffic in any fire district and prescribe all other measures calculated to decrease the danger of fire". (R.S. 1941, c.93, s.144; 6 Geo. VI, C.30, S.5; 2-3 Elizabeth II, c.25, S.18).

In the Province of Quebec, every person violating these provisions when the forest is not closed to traffic, shall be liable to a fine of not less than fifteen dollars nor more than twenty-five dollars or to imprisonment for not less than ten days nor more than thirty days, for the first offence, and to a fine of not less than twenty-five dollars nor more than fifty dollars or to imprisonment for not less than one month or more than two months, for each subsequent offence.

In the Province of Quebec, when the forest is closed to traffic, the offender shall be liable to a fine of not less than fifty dollars nor more than one hundred dollars or to imprisonment for not less than one month nor more than two months, for the first offence, and to a fine of not less than one hundred dollars nor more than two hundred dollars or to imprisonment for not less than two months nor more than three months, for each subsequent offence.

In the Province of Quebec, any person found guilty of an infringement of these provisions, shall also forfeit the right to enter and remain in the forest during the same year.

NOVA SCOTIA

Sections 117 and 118 of the Lands and Forests Act are as follows:

Section 117 -

- (1) The Minister whenever he deems it necessary for the protection of the forests may at any time by proclamation set aside for any period deemed necessary any area of forest land upon which no person shall enter for the purpose of travelling, camping, fishing or picnicking or any other purpose, without first notifying the local chief ranger or sub-ranger or other person duly authorized to receive such notification of the route, destination, purpose and duration of the trip, with dates, and having obtained authorization in writing from the local chief ranger or sub-ranger or other person duly authorized to issue same.
- (2) This Section shall not apply to the actual owner or occupier of forest land entered upon or to their employees or to chief rangers, sub-rangers, voluntary rangers, fire fighters or land surveyors.

- (3) Any person found in a protected area without a permit shall upon conviction be subject to a penalty of not less than ten dollars nor more than one hundred dollars. 1935, c.4, s.110.

Section 118 -

- (1) Any chief ranger or sub-ranger or other person duly authorized by the Minister is hereby empowered to issue and may issue written "travel permits" authorizing any person to enter upon forest land for the purpose set forth in Section 117.
- (2) Every such person shall be subject to every regulation for the time being in force and also every condition, provision, restriction and regulation which in the case of any permit the Minister may deem necessary or expedient and may incorporate in the permit.
- (3) Every permit issued under this Section shall be subject to revocation. 1935, c.4, s.111.

PROTECTION OF WILDLIFE

It is desired to impress on all pilots the importance of the conservation of wildlife and to urge them to become familiar with the game laws in force in the various provinces and to co-operate with all game officers to see that violations of game laws do not occur.

The following is a list of the Provincial and Territorial Game Officers in Canada and any information desired, relative to any limitations placed upon aircraft in connection with hunting or fishing, and any information in general with regard to the preservation of wildlife within the various provinces may be obtained from the officer shown for each province. Information pertaining to the migratory bird regulations may be obtained direct from Chief Canadian Wildlife Service, Ottawa, Ont.

List of Principal Provincial and Territorial Game Officers

Commissioner of the Yukon Territory,
Dawson, Y. T.

Director, Game and Fisheries Branch,
Department of Mines and National Resources,
Winnipeg, Man.

Deputy Commissioner,
Northwest Territories,
Department of Resources and Development,
Ottawa, Ont.

Chief, Fish and Wildlife Branch,
Department of Lands and Forests,
Toronto 5, Ont.

Game Commissioner,
567 Burrard St.,
Vancouver, B. C.

Deputy Minister of Fish and Game,
Quebec, P. Q.

Fish and Game Commissioner,
Department of Lands and Forests,
Edmonton, Alta.

Chief Game Warden,
Department of Lands and Mines,
Fredericton, N. B.

Game Commissioner,
Department of Natural Resources and
Industrial Development,
Regina, Sask.

Deputy Minister of Lands and Forests,
Halifax, N. S.

Deputy Minister of Industry and Natural
Resources,
Charlottetown, P. E. I.

Chief Game Warden,
Department of Natural Resources,
St. John's, Nfld.

MIGRATORY BIRDS PROTECTION

The attention of all pilots and aircraft owners is drawn to the Migratory Bird Regulations which provide that:

"Section 15. (1) Throughout Canada, no person shall kill, hunt, capture, injure, take or molest or attempt to kill, hunt, capture, injure, take or molest a migratory game bird.

- (b) By the use of swivel gun, machine gun, battery, aeroplane, power-boat or sailboat;
- (h) by using a power-boat, aeroplane or motor vehicle to disturb birds with the object of driving them towards a hunter".

It should be noted that the above-quoted regulations are applicable throughout Canada, and that any person violating the regulations is liable upon summary conviction to a fine of from ten dollars to three hundred dollars, or to imprisonment for up to six months or to both fine and imprisonment with forfeiture of all equipment used.

The Department has received complaints concerning the unnecessary disturbance of migratory birds caused by aircraft alighting in or flying low over their nesting, feeding or resting grounds. Geese particularly are in great fear of aircraft; and their movements may be seriously disorganized by such interference. From a financial standpoint, these geese are a valuable asset to Canada, also several species are nearing extinction, and from a purely humane viewpoint, it is felt that every effort should be made to preserve them.

It is known that a vast majority of pilots are anxious not to molest these birds unnecessarily; and the attention of all concerned is directed toward this matter, in order that they may avoid these areas when the birds are using them.

Following is a list showing the principal areas frequented by geese at different times of the year.

Central and Eastern Canada	Time
Coast of Hudson Bay and James Bay from the Ontario-Manitoba boundary to Ontario-Quebec boundary	1st May to 31st October
The Ghost River near Lake Abitibi, Ont.	Month of October
Kingsville, Ont. (Bird Sanctuary)	Spring, Winter, Autumn
East Coast of James Bay from the Ontario-Quebec boundary north to Cape Jones	1st May to 31st October
St. Lawrence River around and below the lower end of the Island of Orleans	Spring and Autumn
Port Joli Bird Sanctuary which consists of portions of three separate arms of the sea, on the outer coast of Nova Scotia, in Queens and Shelburne Counties, known as Port Joli, Port Hebert and Sable River	1st October to 30th April
Dewey Soper Bird Sanctuary which consists of all that portion of Baffin Island, in the Northwest Territories more particularly described as follows: Commencing at an astronomical observation monument placed on the brink of a cliff and located at approximate latitude sixty-five degrees and thirty-one minutes and approximate longitude seventy-three degrees and forty-eight minutes; thence southerly and easterly along said brink of cliff to a point of latitude sixty-five degrees and nineteen minutes and of approximate longitude seventy-three degrees and two minutes; thence due east to longitude seventy-three degrees; thence due north to latitude sixty-six degrees and ten minutes; thence due east to longitude seventy-two degrees and forty minutes; thence due north to the middle thread of the Koukdjuak River; thence westerly along said middle thread to longitude seventy-three degrees; thence on an azimuth of three hundred and fifteen degrees to a point on a line on the seaward side of, conforming to the sinuosities of and five miles distant from the mean high tide water mark of Foxe Basin; thence southwesterly, southeasterly and southwesterly along said line to the meridian passing through the point of commencement; thence south along said meridian to the point of commencement.	Aircraft should not be flown at an altitude of less than 2,500 ft. over this area nor are landings to be made within this area from 15th May to 30th September inclusive.

Western Canada	Time
Many Island Lake, Alta.	Spring and Autumn
Johnston Lake, Sask. (Bird Sanctuary)	Spring
Big Quill Lake, Sask. (Bird Sanctuary)	Spring
Manito Lake, Sask. (Bird Sanctuary)	Spring and Autumn
Shoal Lake, Man. about 35 miles northwest of Winnipeg	15th April to 10th May
Grants Lake, Man.	15th April to 15th May
White Plains, Man.	Spring
Sanford-Brunkild, Man.	Spring
Whitewater Lake, Man.	Spring
Oak Lake, Man.	Spring
Wood Buffalo Park, N. W. T.	From 1st April to 15th October inclusive, aircraft are not to be flown below 2,000 feet above the terrain nor landings made in the portion of Wood Buffalo Park described below.

Beginning at the north-east corner of Wood Buffalo Park at the junction of the Nyarling and Little Buffalo Rivers; thence southward along the east boundary of the park to the Northwest Territories-Alberta boundary; thence westward along this boundary to 114°30' west longitude; thence northward along 114°30' to the north boundary of the park and thence eastward along the north boundary of the park to the starting point at the north-east corner.

GAME ORDINANCE AND FUR EXPORT ORDINANCE OF THE NORTHWEST TERRITORIES

The attention of all pilots and operators is drawn to the provisions of the Game Ordinance and the Fur Export Ordinance of the Northwest Territories. Both Ordinances are contained in a pamphlet which is available from the Territorial Division, Department of Northern Affairs and National Resources.

The Game Ordinance provides that: -

- (1) no person shall hunt any game in the Northwest Territories unless authorized to do so by the Ordinance of a licence issued to him.
- (2) no person shall hunt game from aircraft.
- (3) no person shall carry on hunting operations by the use or aid of aircraft except that aircraft may be used as a means of transportation between the settlement where a hunter or trapper is outfitted and the principal camp used as headquarters in connection with his hunting operations.
- (4) the meat or skins or pelts of game shall not be carried in aircraft except by written permission of a game officer.
- (5) no person shall use aircraft as a means of transportation to or from or within the Mackenzie Mountains Preserve in connection with his hunting operations.

Penalties

For more serious offences including that of hunting without a licence:

Fine of \$50 to \$5,000 or imprisonment not exceeding six months or both fine and imprisonment.

For other offences including that of illegal use of aircraft:

Fine of \$5.00 to \$500 or imprisonment not exceeding two months or both fine and imprisonment.

The Fur Export Ordinance provides that: -

- (1) no person shall export any furs from the Northwest Territories unless a permit has been issued therefor, the tax paid, and the furs are stamped or sealed in accordance with the Ordinance.
- (2) no person, transportation company, or common carrier shall accept for transportation furs for export unless the furs or package containing the furs has been stamped or sealed as provided by the Ordinance.
- (3) Penalty for any violation: Fine not exceeding \$1,000 or imprisonment not exceeding six months or both fine and imprisonment.

Pilots and Operators intending to enter the Northwest Territories are advised to secure copies of the pamphlet mentioned above.

REINDEER PROTECTION

Under the Reindeer Protection Ordinance and Regulations, the Commissioner of the Northwest Territories exercises considerable supervision over the activities of persons who live within the Reindeer Reserve near the Mackenzie Delta, or who may pass through the reserve. It is the practice to issue permits to persons on whose co-operation the Commissioner can rely in the protection of the reindeer herds.

The attention of all operators is drawn to the difficulty the Department has in making known to visitors the necessity for avoiding any disturbance of the reindeer herds. Any person intending to proceed by air through the reindeer reserve near the Mackenzie Delta should communicate in advance with District Administrator, Aklavik, or if in the vicinity of the Reindeer Station, with Reindeer Superintendent, who will give directions as may be necessary in the circumstances.

SECTION II

GROUND HAZARDS

POTENTIAL HAZARD - HELICOPTER ROTOR BLADES

All persons associated with the operation of helicopters are urged to exercise extreme caution while embarking or disembarking from a helicopter when the rotor blades are in motion.

It is particularly hazardous to embark or disembark if the rotor blades are turning at a low number of revolutions per minute with gusting winds prevailing, since, under these circumstances, the blades may momentarily descend much closer to the ground than is normal.

It should also be appreciated that the rotor blades will be relatively lower if the ground, close to the landing area, rises away from the helicopter and the following rule should be kept in mind

"Never walk uphill away from a helicopter".

"Never walk downhill towards a helicopter".

USE OF AIRBORNE RADAR

Flight crews and technicians operating airborne radar are cautioned to use discretion in the use of this equipment on the ground, except in the "stand-by" position.

With the set in operation, an area extending to 36 feet distance from the front of the radiating and stationary airborne radar antenna must be considered an explosion and fire hazard zone, and no volatile liquids should be stored or handled in this area; and an area extending to 46 feet from the antenna must be considered a health hazard zone.

Persons concerned should avoid exposure to the primary beam of a radar when the antenna is not scanning, and should not make detailed examination of radar antenna, wave guide openings or feed horn during periods of transmission.

Flight crews operating radar are not exposed to transmissions from their own sets due to the "cut-off" by their own aircraft.

Explosion and fire hazards may be reduced by protecting storage areas for volatile liquids with screens of absorption material.

SAFETY PRECAUTIONS TO PREVENT INJURY TO PERSONS ON THE GROUND

The attention of pilots and operators of aircraft is drawn to the responsibility that rests on them to ensure that adequate arrangements are made for proper control of areas which are being used for passenger carrying operations in connection with Fairs, Exhibitions, Summer Resorts and other public gatherings. Accidents where third parties have received injuries have occurred, in every case due to the fact that the public have been allowed to cross the proposed take off runway or the pilot failed to observe the presence of someone in his path.

It is pointed out that operations, particularly from unlicensed areas, are entirely at the discretion and responsibility of the pilot, operator or owner, who must accept the consequences for any damage attributable to lack of proper policing or neglect to take reasonable precaution and keep a proper lookout for danger.

SAFETY PRECAUTIONS STARTING AND RUNNING AIRCRAFT ENGINES

To reduce the possibility of injury to persons by rotating propellers, the following precautions should be taken: -

- (i) All inexperienced and unauthorized persons be kept clear of aircraft before engines are started and not permitted to approach aircraft until engines are stopped.
- (ii) Prominent notices be posted at all permanent bases warning the public to "beware and stay clear of propellers".
- (iii) That aircraft on the apron be railed off by means of either permanent or portable barriers and the public required to remain behind these barriers.
- (iv) That engines be switched off before any attempt is made to free a skiplane frozen to the snow by the use of levers, shovels or other means.

SECTION III

SECURITY CONTROL

INTERCEPTION OF CIVIL AIRCRAFT

When an aircraft is plotted within certain areas in Canada and the plot track cannot be identified by flight plan or other means it then becomes necessary by interception to positively identify that aircraft to determine that it is in fact not hostile.

The necessity for an interception may be the fault of the intercepted aircraft through failure to file or adhere to its flight plan or may be caused by a communication break-down or a variety of other reasons and an interception is then the only means of positive identification.

Interceptions are made only where the possibility is considered to exist that an unidentified aircraft may be truly hostile in intent. Interceptions are made in a serious manner presuming the unidentified aircraft to be hostile until definitely proven to the contrary. Therefore, for example, night interceptions are made with all lights out and the interceptor approaches into close proximity and identifies the unknown aircraft by reading the identification markings by means of a light. The fact that the interceptors do not have lights on is not considered dangerous as they are controlled by radar from the ground and are also equipped with airborne radar.

Intercepted aircraft should maintain a steady course and under no circumstances take retaliatory action such as shining a light on an interceptor or attempt evasive action. Retaliatory action on the part of an intercepted aircraft could be construed as hostile intent and might result in drastic consequences.

Practice interceptions are not carried out on civil aircraft, and therefore, if a civil aircraft is intercepted assurance can be given that the interception is necessary.

The co-operation of all civil pilots is required in order that when an interception does become necessary it can be made in the safest manner possible.

INFORMATION CONCERNING THE CONDUCT OF ESCAT TESTS

Pilots are advised that procedures have been developed for testing the effectiveness of the agencies and communications facilities which would be employed should it become necessary to implement the Emergency Security Control of Air Traffic (A. N. O. Series V, No. 14, Part VII). These procedures will be exercised from time to time without advance notice.

These tests should in no way inconvenience aircraft in flight other than to make a routine acknowledgement of the test message which may be transmitted to them. The normal test message will read as follows:

"This is an ESCAT test. Repeat. This is an ESCAT test. All aircraft will acknowledge this message and continue normal operations."

As these tests are considered essential to national security, the co-operation of all pilots and agencies is necessary.

VITAL INTELLIGENCE SIGHTING - CIRVIS REPORTING PROCEDURES

In order to extend the early warning coverage for the defence of the North American continent a plan has been developed for the reporting of vital intelligence sightings during peacetime. Reports originating from airborne or land-based observers will be known as CIRVIS (pronounced SUR-VEES) messages.

Who Reports -

All Canadian aircraft should originate CIRVIS reports as and when applicable.

When to Report -

- (1) CIRVIS reports should be made immediately upon a vital intelligence sighting except when the aircraft is over a foreign country other than the U. S. , Greenland or Iceland.
- (2) When a situation previously reported changes sufficiently to warrant a supplementary or amplifying or cancellation report.
- (3) In the event a CIRVIS report cannot be made by radio; it should be filed with the nearest Canadian or U. S. Government aeradio station, air traffic control office or military or consular authority immediately upon landing. Such reports should be made by the quickest available means.

To Whom to Report -

CIRVIS messages passed by radio should be transmitted to the nearest or most convenient Canadian or U. S. Government aeradio station. There is no need to address such messages as aeradio stations have detailed instructions for the delivery of CIRVIS messages.

What to Report -

- (1) While airborne: all airborne, waterborne or ground objects which appear to be hostile, suspicious or unidentified should be reported. Examples:
 - (1) Guided missiles,
 - (2) Unidentified flying objects,
 - (3) Submarines,
 - (4) Surface warships positively identified as not Canadian or U. S. ,
 - (5) Aircraft or contrails which appear to be directed against Canada, the U.S. their territories or possessions,
 - (6) Any unexplained or unusual activity which may indicate a possible attack against or through Canada, the U.S. their territories or possessions; including the presence of any unidentified or other suspicious ground parties in Polar regions or other remote or sparsely populated areas.
- (2) Upon Landing: -
 - (1) Reports which for any reason could not be transmitted while airborne.
 - (2) Unlisted airfields or facilities, weather stations or air navigation aids.
 - (3) Post-landing reports.

Contents of Reports -

CIRVIS reports shall contain the following data as applicable in the order listed:

- (1) the word CIRVIS as the first word of the text
- (2) identification of the reporting aircraft
- (3) the object sighted. Give a brief description of the sighting which should contain the following items as appropriate.
 - (a) Number of aircraft, vessels, missiles, submarines, etc.
 - (b) Category of object, general description, etc; e.g. , size, shape, type of propulsion, etc.
- (4) the position of the object, indicated by any of the following methods:
 - (a) Latitude and longitude,
 - (b) Over a radio fix,
 - (c) True bearing and distance from a radio fix,
 - (d) Over a well-known or well-defined geographic point,
 - (e) True bearing and distance from a geographic point.
- (5) Date and time of sighting, expressed in GMT;
- (6) Altitude of object, may be expressed as low, medium or high;
- (7) Direction of travel of the object;
- (8) Speed of the object;
- (9) Any observed identification, insignia or other significant information.

Every reasonable effort should be made to positively identify the object sighted. CIRVIS reports should not be delayed due to lack of data for any of the above items.

How to Report -

Calling a Ground Station - When calling a ground station to pass a CIRVIS message the aircraft should precede the call by the word CIRVIS (pronounced SUR VEES) spoken three times as a priority indicator. If this priority indicator does not produce satisfactory precedence the International Urgency Signal may be used.

Example of Call -

CIRVIS CIRVIS CIRVIS - GOOSE RADIO THIS IS AIR CANADA FIVE ZERO FIVE - CIRVIS REPORT - OVER.

Examples of CIRVIS Initial Report -

CIRVIS AIR CANADA FIVE ZERO FIVE SIGHTED FORMATION OF SIX JET BOMBERS CONFIGURATION IS SWEEP WING WITH EIGHT JET ENGINES TWO ZERO ZERO MILES EAST OF CAPE HARRISON AT ONE THREE ONE THREE FIVE ZERO ZULU ALTITUDE THREE FIVE THOUSAND HEADING TWO SEVEN ZERO DEGREES NO MARKINGS OBSERVED - OVER.

Supplementary or Amplifying Reports -

CIRVIS AIR CANADA FIVE ZERO FIVE SIX JET BOMBERS PREVIOUSLY REPORTED AT ONE THREE ONE THREE FIVE ZERO ZULU NOW ONE THREE ZERO MILES WEST OF CAPE HARRISON AT ONE THREE ONE FOUR THREE FIVE ZULU HEADING TWO THREE FIVE DEGREES - OVER.

Cancellation Report -

CIRVIS AIR CANADA FIVE ZERO FIVE CANCEL CIRVIS REPORT OF ONE THREE ONE THREE FIVE ZERO ZULU SIX JET BOMBERS POSITIVELY IDENTIFIED AS AIR FORCE BRAVO FOUR SEVENS AT ONE THREE ONE FOUR SIX ZULU - OVER.

SECTION IV MISCELLANEOUS

IN-FLIGHT INCIDENT REPORTS

The co-operation of all pilots is requested in reporting observed incidents which appear to contravene the Air Regulations. It should, however, be pointed out that numerous incidents reported in the past have been so lacking in evidence as to preclude successful investigation.

The following is the revised procedure for reporting an in-flight incident:-

- (1) Report to be made by radio as soon as possible, through an appropriate communications unit to the ATC centre, in the following form:
 - (a) incident report,
 - (b) name of pilot reporting incident,
 - (c) type and identification of reporting aircraft,
 - (d) position, altitude and flight condition of reporting aircraft,
 - (e) date and time (local standard) of incident,
 - (f) location - including miles and direction from a radio fix or a known geographical position,
 - (g) altitude of reported aircraft,
 - (h) weather,
 - (i) type, markings and other available details of reported aircraft,
 - (j) details of incident including proximity, manoeuvre, etc.

Note: - Following, as Appendix "A", is a suggested form and a sample verbal report to be used in the air in order that all pertinent information may be assembled.

- (2) Details of the report to be confirmed by the pilot by collect telegram to the nearest Regional Director, Air Services immediately after landing, - the telegram to be in the same form as the verbal report outlined in section 1;
- (3) A full written narrative report amplifying the telegraphic report, to be made by the pilot to that Regional Director, Air Services within seven days;
- (4) Air Traffic Control Action.

The agency receiving the radio report of an incident is to transmit the details immediately to the appropriate ATC centre, where the following immediate action will be taken;

- (i) where the reported and reporting aircraft are both military, details of the incident will be forwarded to the nearest Rescue Co-ordination Centre of the RCAF,
 - (ii) where the reported and reporting aircraft are both civil, details of the incident will be forwarded to the nearest Regional Director, Air Services,
 - (iii) where both military and civil aircraft are involved, both the nearest Rescue Co-ordination Centre and the nearest Regional Director, Air Services will be informed,
 - (iv) the ATC centre will add any pertinent information that concerns the reported incident;
- (5) Regional Directors, Air Services action.

Regional Directors, Air Services will be responsible for the delegation of a member of their staff to conduct the investigation of an incident. All Regions will be issued with detailed instructions on the conduct of these investigations;

- (6) Where an incident occurs within twenty-five miles of the next point of intended landing, the initial report may be made by telephone if circumstances make it inconvenient to report immediately by radio. However, the telegraphic and written reports will still be required;
- (7) Pilots involved in air incidents may expect to be interrogated as soon as practicable after the incident occurs. It must be impressed on all concerned that speed is the essence of a successful investigation, and only reports received within seven days of the occurrence of an incident will be investigated.

APPENDIX "A"

- A Incident Report
- B Name of person reporting incident
- C Type and identification his aircraft
- D Position, Altitude, Flight condition his aircraft
- E Date and time of incident
- F Location - include distance and direction from known fix
- G Altitude of reported aircraft
- H Weather vicinity of incident
- I Type, markings and other details reported aircraft
- J Details of Incident including proximity, manoeuvre, etc.

Sample of Verbal Report

- A Incident Report
- B John Doe

APPENDIX "A" (Cont'd)

- C Lockheed 1808 CF-XYZ
- D 3 miles east of Stirling Range 5000' ASL between layers
- E 10th March, 1412 EST
- F 10 miles east of Stirling Range
- G 5000' ASL
- H 3500' broken visibility 3 miles light snow
- I Piper CF-ABC, Yellow and Red
- J CF-XYZ en route Ottawa to Toronto encountered Piper CF-ABC approaching head on 10 miles east of Stirling Range. Evasive action required to avoid collision.

WARNING TO PILOTS FLYING TO THE UNITED STATES

Prior to the commencement of a flight to the United States, all pilots and operators should acquaint themselves with the latest information regarding Airspace Reservations, Danger Areas, Warning Areas and Caution Areas along the proposed route.

Information regarding these areas is given in the FAA publication "Airman's Information Manual" and is kept up-to-date by Notices to Airmen. This information may be obtained from any FAA office.

ISSUE AND DISSEMINATION OF SIGMET INFORMATION - EASTERN CANADA

Gander and Goose Main Meteorological Offices issue information on specified significant inflight weather (SIGMET), in conformity with WMO and ICAO procedures, for the Gander Oceanic FIR and the Gander and Goose domestic aviation areas of responsibility as set forth in the Meteorological Branch publication "MANAIR". A copy of the plan for the issue of SIGMET information may be obtained from either the Department of Transport, Ottawa, Ontario or the Director, Meteorological Branch, 315 Bloor Street West, Toronto.

The propose of SIGMET information is to provide, in a form convenient for ground to air transmission, short-term notice of specified phenomena of special importance to aircraft in flight, as follows: active thunderstorm areas; lines of thunderstorms; hurricanes; heavy hail; heavy turbulence; heavy icing; marked mountain waves; widespread sand/dust storms.

The list of phenomena included in SIGMETS is restricted in accordance with international agreement in order that the warning value will not be undermined by too frequent issue.

Thus, SIGMETS are pertinent to transport aircraft capable of IFR operation, and also to light aircraft, but there are phenomena important to light aircraft operations, eg.g. areas of low ceilings, moderate icing, etc., that are not included in SIGMETS.

SIGMETS will automatically amend the outstanding aviation forecast for the period of the SIGMET, usually two to four hours.

SIGMETS will be transmitted in eastern Canada on designated meteorological teletype circuits and local and field circuits to make them available to Air Traffic service units, dispatch offices and meteorological offices.

Subsequently, SIGMETS will be distributed to international meteorological authorities in accordance with ICAO Regional plans.

Aeradio stations situated within and on or about the periphery of the area covered by a particular SIGMET will disseminate this information to aircraft in flight by the following means (1) broadcast on navigational aids voice channels immediately upon receipt (2) included in twice hourly scheduled broadcasts for the duration of the valid period (3) directed transmission to specific aircraft when considered

appropriate by the aeradio station operator (4) on request of aircrew over normal air-ground communications channels.

MARSHALLING SIGNALS - AIRCRAFT

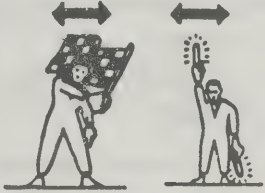



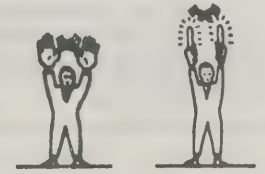
In order to standardize signalling between ground and flight personnel in aircraft, when required for aircraft entering, departing or manoeuvring within the movement area of an aerodrome, the marshalling signals shown in Appendix I and II, shall be used.



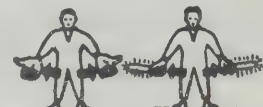
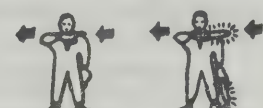

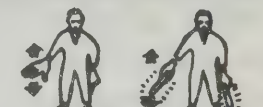
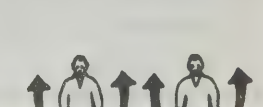


The signals are designed for use with the signalman facing an aeroplane in a position forward of the left wingtip in full view of the pilot or, in the case of a helicopter, in a position forward of the helicopter within full view of the pilot.



The meaning of these signals remains the same if bats, illuminated wands or flashlights are held.

Appendix I

AEROPLANES




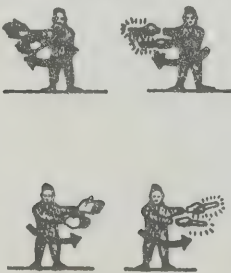

<p>1. To proceed under further guidance by signalman.</p> <p>Signalman directs pilot if traffic conditions on aerodrome require this action.</p>	
<p>2. Move ahead.</p> <p>Arms a little aside and repeatedly moved upward-backward, beckoning onward.</p>	
<p>3. a) Turn to your left</p> <p>Right arm downward, left arm repeatedly moved upward-backward. Speed of arm movement indicating rate of turn.</p>	
<p>3. b) Turn to your right</p> <p>Left arm downward, right arm repeatedly moved upward-backward. Speed of arm movement indicating rate of turn.</p>	
<p>4. Stop.</p> <p>Arms repeatedly crossed above head (the rapidity of the arm movement should be related to the urgency of the stop, i.e. the faster the movement the quicker the stop).</p>	

<p>5. Start engines.</p> <p>Circular motion of right hand to head level with left arm pointing to engine.</p>	
<p>6. a) Insert chocks</p> <p>Arms down palms facing inwards swing arms from extended position inwards.</p>	
<p>6. b) Chocks away</p> <p>Arms down palms facing outwards swing arms outward.</p>	
<p>7. Cut motors.</p> <p>Either arm and hand level with shoulder, hand across throat, palm downward.</p>	
<p>8. Slow down.</p> <p>Arms down with palms toward ground, then moved up and down several times.</p>	
<p>9. Slow down motor(s) on indicated side.</p> <p>Arms down with palms toward ground, then either right or left hand waved up and down indicating that left or right side motor(s) respectively should be slowed down.</p>	
<p>10. Move Back.</p> <p>Arms by sides, palms facing forward, swept forward and upward repeatedly to shoulder height.</p>	
<p>11. a) Turns while backing.</p> <p>for tail to starboard; point left arm down, and right arm brought from overhead, vertical position to horizontal forward position, repeating right arm movement.</p>	
<p>11. b) Turns while backing.</p> <p>for tail to port; point right arm down, and left arm brought from overhead, vertical position to horizontal forward position, repeating left arm movement.</p>	

<p>12. This bay.</p> <p>Arms above head in vertical position with palms facing inwards.</p>	
<p>13. All clear.</p> <p>Right arm raised at elbow with palm facing forward.</p>	

Appendix II

HOVERING HELICOPTERS

<p>Arms extended horizontally side-ways.</p>	<p>HOVER</p> 
<p>Arms extended horizontally to the side beckoning upwards, with palms turned up. Speed of movement indicates rate of ascent.</p>	<p>MOVE UPWARDS</p> 
<p>Arms extended horizontally to the side beckoning downwards, with palms turned down. Speed of movement indicates rate of descent.</p>	<p>MOVE DOWNWARDS</p> 
<p>Appropriate arm extended horizontally sideways in direction of movement and other arm swung in front of body in same direction, in a repeating movement.</p>	<p>MOVE HORIZONTALLY SIGNALS</p>  <p>LAND</p>  <p>Arms crossed and extended downwards in front of the body.</p>

MOVEMENT OF MAIL TO ISOLATED STATIONS IN THE CANADIAN NORTH

The Post Office Department takes advantage of every opportunity to move mail by air to very isolated points, many of which can only depend on mail but once or twice a year. It would be greatly appreciated, therefore, if in preparing to despatch a flight to any isolated point, the operator concerned would notify the nearest District Director of Postal Service or Postmaster, in order to give the Post Office Department an opportunity to utilize all courtesy flights to forward mail to such points as may be visited. In many instances, the weight amounts to only a very few pounds; but it frequently takes some days to move the mail from the office at which it is being kept to the point of departure of the aircraft.

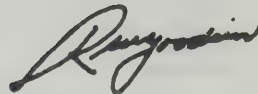
DISTRIBUTION OF AIRCRAFT ACCIDENT REPORTS

Summary Reports of civil aircraft accidents will in future be issued to interested persons on written request.

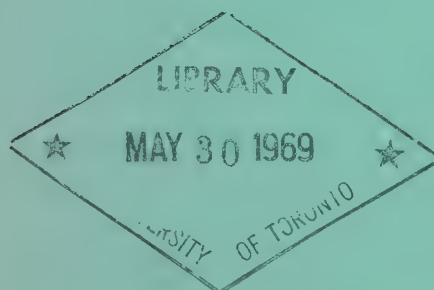
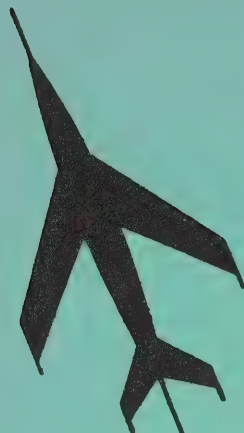
Production facilities for these reports are limited; therefore, mailing lists will be reviewed annually and renewals made only on request.

Requests for separate reports or for inclusion in the mailing list should be addressed to:

Director of Civil Aviation,
Attn: Information and Publications,
Department of Transport,
Ottawa.



R. W. Goodwin,
Director, Civil Aviation.



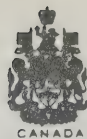
INFORMATION CIRCULAR

**AIRCRAFT
LICENSING**

DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Aircraft

0/33/64
31th December

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

AIRCRAFT LICENSING

(Superseding Information Circulars 0/28/58, 0/18/59 and 0/38/63).

CONTENTS

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Aircraft Registration - Export - Import - Ferry Permits	2
Procedures Governing the Certification of Aircraft in Canada	3
Ultra-Light Aircraft Registration - Operating Restrictions	4

..... 4

AIRCRAFT REGISTRATION-EXPORT-IMPORT-FERRY PERMITS

Issue of Certificates of Registration, Certificates of Airworthiness and Flight Permits

- (a) Applications for the issue of registration markings, the registration of aircraft and the issue of Certificates of Airworthiness or Flight Permits are to be made at the office of the appropriate Regional Director, Air Services.

Importing of Aircraft

- (a) Application to import a used aircraft should be made to the Customs and Excise Administration, Department of National Revenue, Ottawa, Ontario.
- (b) An aircraft on delivery flight from abroad to a Canadian owner is required to display Canadian nationality and registration markings. Before taking delivery of the aircraft from the foreign owner, the Canadian owner must first obtain provisional Canadian nationality and registration markings, a ferry permit valid for the delivery flight, and validation, where necessary, of the licences of the operating crew for the purpose of the delivery flight.
- (c) Upon applying to the Regional office, the request should contain the following information:
- (i) name and address of purchaser,
 - (ii) type, model and serial number of aircraft,
 - (iii) address of manufacturer of aircraft,
 - (iv) address of plant or agent from which delivery will be made,
 - (v) destination of aircraft in Canada and Customs airport of entry.
- (d) The registration markings should be transmitted to the manufacturer or exporter as soon as they have been allotted to avoid delay in delivery of the aircraft. It will be the responsibility of the purchaser to submit a formal application for registration of the aircraft which bears the provisional Canadian registration markings accompanied by the pertinent documents listed on the application form. As provisional markings may be issued for a limited time only, formal application for registration should be made as soon as possible after importation.

Export of Aircraft

- (a) Before aircraft are exported on a permanent basis from Canada to a foreign country, except the United States of America, the following requirements are to be met:
- (i) An Export Permit is to be obtained from the Department of Trade and Commerce, Export and Import Permit Section, Trade and Commerce Bldg., Ottawa.
 - (ii) At the place of shipment, or the Customs Airport of Exit, the aircraft must be declared outwards on the Export Entry (B. 13).
- (b) The requirements contained in (i) and (ii) above apply to aircraft that are shipped, either by surface transportation or ferried under their own power.

Ferry Permits

- (a) Pursuant to Section 210 and 211 Div. II, Part II of the Air Regulations, flight permits may be issued for the operation of aircraft which do not have a Certificate of Airworthiness or which have a Certificate of Airworthiness which is not in force. A ferry permit is a form of flight permit.
- (b) Applications for ferry permits should be made to the Regional Superintendent, Air Regulations, of the region in which the ferry flight originates. The ferry permit will pertain to a specific aircraft for a specific flight within Canadian territory and may contain such conditions and restrictions as are deemed necessary in the interest of safety by the issuing officer.
- (c) In all cases the aircraft must be fit and serviceable for the flight specified and a certification to this effect made prior to the flight in the Journey Log Book of the aircraft by a qualified Aircraft Maintenance Engineer. The issue of ferry permits for the export of surplus military aircraft will be subject to compliance with Part I, Chapter II, Paras. 2.8.2 to 2.8.4 of the Engineering and Inspection Manual.

- (d) Pilots of aircraft operated with ferry permits are normally required to hold an appropriate Canadian Pilot Licence. However, licensed pilots of contracting States may, upon application supported by proof of competency, obtain from the Regional Superintendent, Air Regulations, permission to act as pilot on export ferry flights, originating in Canada.

PROCEDURES GOVERNING THE CERTIFICATION OF AIRCRAFT IN CANADA

A civil aircraft may not be flown in Canada unless there is in force in respect of that aircraft a Certificate of Airworthiness issued under the laws of Canada or the laws of the country in which the aircraft is registered, or a Flight Permit issued under the Canadian Air Regulations. A Certificate of Airworthiness is issued only when the aircraft conforms to an approved type design which meets airworthiness requirements. A Flight Permit may be issued for an ex-military aircraft of a type which has not been shown to meet civil airworthiness requirements, but which has had a satisfactory service record (it allows the aircraft to be operated as a private or executive type only without a Certificate of Airworthiness), or for the flight testing of a prototype aircraft or for certain other very special cases.

In general, the following is a broad outline of that which is required in Canada before a design can be approved and Certificates of Airworthiness issued for aircraft which conform to that approved design. Since the basic airworthiness requirements are revised from time to time, anyone contemplating building aircraft in Canada should contact the Chief Aeronautical Engineer of the Department of Transport to establish in detail the requirements which will have to be met and all the data which will have to be furnished to establish compliance. This applies to all types of aircraft, whether they be powered, unpowered, fixed wing, or rotary wing types, although specific requirements vary in detail for different types. When it has been proven that the pertinent airworthiness requirements have been met and the design approved, a Canadian Type Approval for the type will be issued, after which individual aircraft of that type conforming with the approved designs are eligible for a Canadian Certificate of Airworthiness. However, the Type Approval will not be issued until the Chief Aeronautical Engineer is satisfied that the design meets all the strength requirements of the airworthiness standards, the prototype has been test flown and complies with all the performance requirements of the airworthiness standards, all equipment, fittings, etc., are in accordance with those standards the Flight Manual, the Maintenance, Repair and Overhaul Instructions have been approved, production drawings have been examined and approved, and all tests, calculations, etc., have been approved. Before a prototype aircraft will be allowed to be flown, the designer must have proven that its strength and fatigue life meets the requirements and show that its estimated performance will also meet the requirements; the prototype must have been constructed under the supervision of either a licensed Aircraft Maintenance Engineer, or the Chief Inspector of an approved company, and in either case the Inspector in charge must certify that the aircraft has been constructed in accordance with the data, etc., which has been submitted for approval. When this has been done, a Flight Permit will be issued giving permission for the designer to conduct the test flights necessary to show compliance with the pertinent airworthiness requirements. When the designer has completed these tests and submitted his reports and proof that the type has met the requirements, then the Departmental Test Pilot will conduct official test flights. When this has been completed and all other required data have been submitted and approved, then a Type Approval will be issued.

Civil aircraft imported from the United Kingdom or the United States of America which have been certified by the Aeronautics Authority of the exporting country as meeting the airworthiness requirements of that country are generally accepted into Canada without further investigation and may be issued a Canadian Certificate of Airworthiness. Proof of compliance is indicated by a valid U.K. Certificate of Airworthiness for U.K. aircraft or a valid U.S. Certificate of Airworthiness for Export for U.S. aircraft.

A Canadian aircraft which is to be exported must be built to an approved design and generally must meet the airworthiness requirements of the country to which it is to be exported. Since international and bilateral agreements require the Canadian Airworthiness Authorities to so certify such aircraft, the approval process outlined above must be followed, unless the country to which the aircraft is to be exported either previously approved the design (in which case the Canadian Authorities will be responsible for inspection and manufacturing surveillance only), or has waived the requirement for Canadian certification. New parts manufactured in Canada for export are subject to the same requirements.

Past experience indicates that the time required for aircraft type certification from the early design stages to the final issue of a Type Approval usually takes at least two years and, depending on the complexity of the design, may run much longer.

ULTRA-LIGHT AIRCRAFT REGISTRATION - OPERATING RESTRICTIONS

In view of the interest shown in the construction and flight of home-built gyroplanes and gyrogliders as well as aeroplanes and gliders, such aircraft may be designated as ultra-light aircraft, issued with an ultra-light flight permit and registered as private aircraft. To be eligible in this classification, the aircraft must conform to the requirements of paragraph 1.8, Chapter I, Part II of the Engineering and Inspection Manual.

Persons interested in the construction of an ultra-light aircraft should communicate with the appropriate Regional Director, Air Services for technical advice and detailed information on the procedure to be followed.

Registration and Issue of Flight Permit

Registration marks will be allocated by the appropriate Regional Director, Air Services upon application prior to the formal registration to allow the builder to affix them to the aircraft during the final phase of construction. The application for formal registration and flight permit and a weight report must be submitted in time to permit the issue of a Certificate of Registration and flight permit before the first test flight.

Flight permits issued for ultra-light aircraft are subject to certain restrictions known as "initial operating restrictions" and "modified operating restrictions". When an aircraft is first issued with an ultra-light flight permit, the "initial operating restrictions" will apply as follows:-

- (a) The aircraft may only be operated from a base approved by the Regional Director, Air Services. The area over which the aircraft is flown shall be restricted so as to minimize any hazard to persons or property on the ground and shall not in any case exceed a 25 mile radius from its base of operation except with the written permission of the Regional Director, Air Services.
- (b) During the first 5 hours of flight of a powered aircraft it may be flown only by pilots who have acquired not less than 100 hours of pilot-in-command flight time in powered aircraft.
- (c) Ultra-light aircraft shall be flown under VISUAL FLIGHT RULES and BY DAY only.
- (d) Flight over foreign territory is prohibited, except with permission from the appropriate authority of the foreign state.
- (e) Acrobatic flight is prohibited.
- (f) The carriage of passengers is prohibited.
- (g) Such additional restrictions as may be entered on the flight permit.

When the aircraft meets the requirements of the Engineering and Inspection Manual for "modified operating restrictions" an application, supported by a satisfactory climb test report and a log of the flight history of the aircraft, should be submitted. If the documentation is in order, the flight permit will be endorsed "Valid for modified operating restrictions" and the following restrictions only will apply from then on:-

- (a) Ultra-light aircraft shall be flown under VISUAL FLIGHT RULES only.
- (b) Flight over foreign territory is prohibited except with permission from the appropriate authority of the foreign state.
- (c) Acrobatic flight is prohibited.
- (d) Such additional restrictions as may be entered on the flight permit.

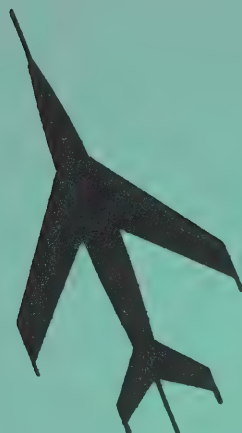
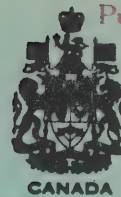
General

Aircraft already registered as ultra-light in accordance with the original ultra-light requirements may continue to be operated under authority of their present permit.

Application forms for registration and flight permit, weight report and climb test forms may be obtained from the office of the Regional Director, Air Services.

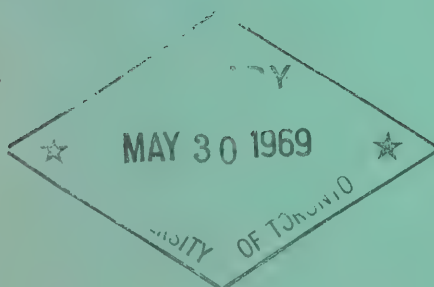
A handwritten signature in dark ink, appearing to read 'R. W. Goodwin', with a stylized, flowing script.

(R. W. Goodwin),
Director, Civil Aviation.



INFORMATION CIRCULAR

SEARCH & RESCUE



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



0/31/64
31st December

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

SEARCH AND RESCUE

Superseding Information Circulars 0/30/62, 0/36/63, 0/10/64 and 0/17/64.

CONTENTS

1. The Royal Canadian Air Force Search and Rescue Service
2. SARAH Beacon - Operating Instructions and Procedures
3. Aircraft Marking
4. Ground Air Visual Signal Code
5. Search and Rescue - Standard Procedure for Pilots
6. Radar Assistance to Aircraft

Appendix I Interception Signals

Appendix II MAP - RCAF Search and Rescue Service

1. THE ROYAL CANADIAN AIR FORCE SEARCH AND RESCUE SERVICE

- 1.1 The Royal Canadian Air Force is the responsible agency in Canada for co-ordinating and operating a Search and Rescue service. The service is available 24 hours per day in all parts of Canada. It is equipped not only to conduct searches but to provide complete rescue service including trained parachute rescue personnel who can render first aid and supply any necessary emergency supplies. Its personnel are specially equipped to provide ground parties that can traverse any terrain in order to affect rescue.
- 1.2 This service is provided through four Search and Rescue Co-ordinating Centres located at Vancouver, Winnipeg, Trenton and Halifax. These centres have direct control of all rescue units in their area and have a vast communications network of civil and military facilities at their disposal.
- 1.3 Effective use of the specialized search and rescue equipment which is available requires the fullest co-operation of all aircraft owners and operators. By eliminating wrong search areas and avoiding unnecessary delays the chances of a successful search are increased. Follow the rules listed below and you can be sure of assistance when it is needed.
 - 1.3.1 Always File a Flight Plan or Flight Notification regardless of the weather along the route of flight or of the area in which the flight will be conducted. File the Flight Plan or Flight Notification with the appropriate Air Traffic Control Unit either directly or through an Ae-radio Station, an Airport Manager's Office or through an R.C.A.F. Flying Control Unit. If communication facilities are inadequate to permit the filing of a Flight Plan or Flight Notification with Air Traffic Control either directly or through another agency then file a Flight Notification with a responsible person. A Flight Plan or Flight Notification must contain the information required by the Flight Plans and Flight Notifications Order, (Air Navigation Order, Series V, No. 4).
 - 1.3.2 Always Follow a Flight Plan or Flight Notification once it is filed to preclude a search in the wrong area.
 - 1.3.3 Always Close a Flight Plan or Flight Notification promptly to preclude a "false" incident which could deprive someone who really needs assistance from obtaining it.
 - 1.3.4 Carry the Emergency Equipment detailed in the Flight Precautions in Sparsely Settled Areas Order (Air Navigation Order, Series V, No. 12) on all flights conducted within sparsely settled areas. While it is not mandatory, the carriage of an emergency radio transmitter capable of transmitting on a distress frequency used by the Royal Canadian Air Force is strongly advocated.
 - 1.3.5 If you Crash Land in uninhabited terrain, stay by your aircraft.
 - 1.3.6 Build and Maintain a Smoke Fire as soon as possible after crash landing.
 - 1.3.7 Use SARAH as directed in Chapter 2.
 - 1.3.8 Use Aircraft Radio if it is serviceable but not until you are overdue and know a watch is being kept for messages from you. Short rather than long messages will save batteries. Use the distress signal times, 15 and 45 minutes after each hour for 3 minutes duration. Your best chance of being heard is probably at night (less traffic, better reception). If you know your position, or approximate position and broadcast it, so much the better.
- 1.4 Advise Search and Rescue is an important rule for operators and owners to remember. As soon as information is received that an aircraft is overdue, immediately alert the nearest Search and Rescue Co-ordinating Centre giving all the known details of the incident. Do not conduct a small scale private search first since such action could deprive those in need of assistance at a time when it is needed most. The following are the RCAF's Rescue Co-ordinating Centres complete with telephone numbers:

Vancouver Rescue Co-ordinating Centre	---	Vancouver	733-9111
Winnipeg Rescue Co-ordinating Centre	---	Winnipeg	832-1311
Trenton Rescue Co-ordinating Centre	---	Trenton	EX2-3511
Halifax Rescue Co-ordinating Centre	---	Halifax	422-9311

- 1.5 In order to become more fully informed about the work of the RCAF Search and Rescue Service and how it can help persons in distress, the RCAF invites interested persons to visit the nearest Rescue Co-ordinating Centre and get acquainted.

2. SARAH BEACON - OPERATING INSTRUCTIONS AND PROCEDURES

- 2.1 Certain RCAF Search and Rescue aircraft have been equipped to receive signals emitted by the SARAH beacon.

- 2.2 In order to make most efficient use of the SARAH beacon the following procedures evolved by Royal Canadian Air Force Search and Rescue are to be followed. If the instruction and procedures detailed do not already appear on the side of the battery of your SARAH beacon, they are to be cut out and attached to the battery. Memorize the instructions to enable you to operate the SARAH in the dark.

- 2.3 Where a SARAH beacon or other emergency transmitter is carried in an aircraft, information to this effect is to be included in the remarks portion of all flight plans and flight notifications.

2.4 OPERATING INSTRUCTIONS AND PROCEDURES

SARAH BEACON

The following instructions and procedures will appear on the sides of the battery.

INSTRUCTIONS

- 2.4.1 TO OPERATE THE BEACON - Pull the beacon toggle twice, to remove the aerial cover, release the aerial and extend the switch plunger fully out. Ensure THE PIN is extracted from the plunger above allowing the spring to depress the plunger and to complete the high tension circuit. The beacon will not operate if the pin is not removed. When the beacon is in operation, a distinct humming noise can be heard from the speech unit.
- 2.4.2 The flexible aerial must be held in a vertical attitude and must not be in direct contact with materials which would cause grounding of the transmissions. For better efficiency operate the beacon from high ground and keep the battery warm; place it inside your clothing if necessary and in below freezing temperature allow battery to warm up before turning beacon on.
- 2.4.3 If you are certain that the search aircraft has found you, you may communicate with the rescue aircraft when it is in your immediate vicinity. To do so, press the TALK button on the speech unit and speak close to the microphone. Press the LISTEN button to hear the reply. Do not attempt to communicate with other survivors through your speech unit. The useful life of the battery is limited and will be rapidly wasted if you use the speech unit pointlessly.
- 2.4.4 TO TURN THE BEACON OFF - Press the switch plunger, located at the base of the aerial, fully in; the humming noise from the speech unit will then cease.

2.4.5 PROCEDURES

ACTIVATE YOUR BEACON STRICTLY IN ACCORDANCE WITH THE PREDETERMINED PROCEDURE

- 2.4.5.1 PROCEDURE 1 - Applies to flights conducted in local area or under GCI or Air Traffic Control. Activate your SARAH beacon continuously commencing one and one half hours after you become overdue at destination or after acknowledgement of distress.
- 2.4.5.2 PROCEDURE 2 - Applies to all other flights. Activate your SARAH beacon for four hours at a time, everyday, between 0900 and 1300 hours Local Time after you become overdue.

NOTE: Do not hesitate to activate your beacon if you see or hear rescue aircraft and do not neglect to carry out other recommended signals and survival procedure.

3. AIRCRAFT MARKING

3.1 The Search and Rescue Division of the Royal Canadian Air Force has requested that light aircraft, unless of unpainted reflecting construction, display large portions of wings and fuselage in vivid colours. The colours should provide the best possible opportunity of being seen from the air by personnel in searching aircraft.

3.2 High visibility paint is particularly good for marking aircraft to make them more conspicuous.

4. GROUND AIR VISUAL SIGNAL CODE

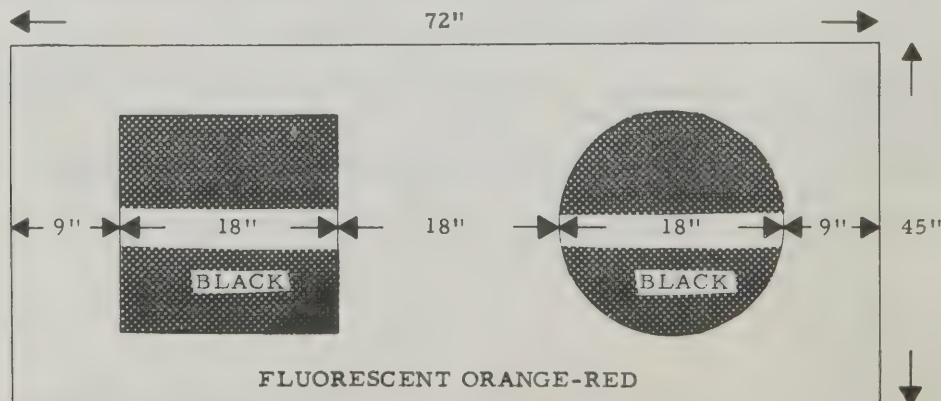
4.1 In accordance with international agreement, the following signals are to be used by survivors for the purpose of communicating with aircraft from the ground, when an emergency exists:-

No	Message	Code Symbol	No	Message	Code Symbol
1	Require doctor - serious injuries	I	10	Will attempt take-off	▷
2	Require medical supplies	||	11	Aircraft seriously damaged	⌈
3	Unable to proceed	X	12	Probably safe to land here	△
4	Require food and water	F	13	Require fuel and oil	L
5	Require firearms and ammunitions	∨	14	All well	LL
6	Require map and compass	□	15	No	N
7	Require signal lamp with battery and radio	⋮	16	Yes	Y
8	Indicate direction to proceed	K	17	Not understood	JL
9	Am proceeding in this direction	↑	18	Require engineer	W

4.2 As far as possible, symbols should be not less than eight feet and care should be taken to lay them out exactly as depicted to avoid confusion with other symbols. As much colour contrast as possible between material used and the background should be provided. Every effort should be made to attract attention by other means, such as radio, flares, smoke or reflected light.

4.3 Private signals from operators to their own aircraft and pilots should be of such a nature as NOT to conflict with the above, which are for use by all persons in case of emergency, only.

4.4 Distress, Urgency and Safety Signals may be found in Air Navigation Order, Series V, No. 6. Pilots should also be familiar with the following distress signal which may be used by small boats. The signal consists of a rectangular cloth panel, fluorescent orange-red in colour, on which a black square and disc are displayed.



5. SEARCH AND RESCUE, STANDARD PROCEDURE FOR PILOTS

5.1 PROCEDURES FOR PILOTS-IN-COMMAND OBSERVING AN ACCIDENT

- 5.1.1 When a pilot-in-command, on an international flight over water, observes that either another aircraft or a surface craft is in distress, he shall unless he is unable, or, in the circumstances of the case, considers it unreasonable or unnecessary;
- (a) keep in sight the craft in distress until such time as his presence is no longer necessary or until he is no longer able to remain in the vicinity of the distressed craft;
 - (b) if his position is not known with certainty, take such action as will facilitate the determination of it;
 - (c) report to the rescue co-ordination centre or air traffic service unit as much of the following information as possible:
 - type of craft in distress; its identification and condition;
 - it's position, expressed in geographical co-ordinates or in distance and true bearing from a distinctive landmark;
 - time of observation expressed in GMT on the 24 hours system;
 - number of persons observed;
 - whether persons have been seen to abandon the craft in distress;
 - number of persons observed to be afloat;
 - apparent physical condition of survivors;
 - (d) act as instructed by the rescue co-ordination centre.
- 5.1.2 If the pilot-in-command of the first aircraft to reach the place of the accident is unable to establish communication with the rescue co-ordination centre or air traffic service unit, he shall take charge of activities of all other aircraft that arrive until such time as by mutual arrangement he hands over to that aircraft best able to provide communication in the prevailing circumstances.

5.2 PROCEDURES FOR A PILOT-IN-COMMAND INTERCEPTING A DISTRESS CALL AND/OR MESSAGE

- 5.2.1 Whenever a distress call and/or message is intercepted on radio telegraphy or radio telephony by a pilot-in-command of an aircraft, other than a search aircraft, he shall:
- (a) plot the position of the aircraft in distress if given;
 - (b) if possible take a bearing on the transmission;
 - (c) at his discretion, while awaiting instructions, proceed to the position given in the distress signal.

5.3 SIGNALS WITH SURFACE CRAFT

- 5.3.1 When it is necessary for an aircraft to direct a surface craft to the place where an aircraft or surface craft is in distress, the aircraft shall do so by transmitting precise instructions by any means at its disposal. If such precise instructions cannot be transmitted or when necessary for any other reason the instructions shall be given by using the procedure prescribed in 5.3.2.

NOTE - Normally a change of heading will be made by the surface craft as an acknowledgment that the direction has been received and will be complied with. If the surface craft is unable to comply it will so indicate by hoisting the international flag "N" or by other visual or radio means.

- 5.3.2 The following procedures performed in sequence by an aircraft shall mean that the aircraft is directing a surface craft towards an aircraft or a surface craft in distress:
- (a) circling the surface craft at least once;

- (b) crossing the projected course of the vessel close ahead at a low altitude, opening and closing the throttle or changing the propeller pitch;
- (c) heading in the direction in which the surface craft is to be directed.

Repetition of such procedures shall have the same meaning.

5.3.3 The following procedure performed by an aircraft shall mean that the assistance of the surface craft to which the signal is directed is no longer required:

- crossing the wake of the vessel close astern at a low altitude, opening and closing the throttle or changing the propeller pitch.

6. RADAR ASSISTANCE TO AIRCRAFT

6.1 Radar Assistance is available on a 24 hour basis to all aircraft within the limits of the Distant Early Warning Identification Zone (DEWIZ), and will render navigational advice when and where possible, but no responsibility for the direct control of aircraft is accepted. The Radar Assistance does not absolve the captain of an aircraft of the responsibility of complying with Air Traffic Control clearances or other required procedures.

6.1.1 INFORMATION THAT MAY BE PROVIDED BY THIS SERVICE IS AS FOLLOWS:

- (a) Track and groundspeed checks,
- (b) Position of the aircraft in latitude and longitude, or by bearing and distance from a known point,
- (c) Magnetic heading to steer and distance to the nearest aerodrome or other designated points,
- (d) Position of heavy cloud in relation to the aircraft.

6.2 It should be emphasized that only in the event of distress or emergency will continuous radar surveillance be provided en route civil aircraft.

6.3 THE PROCEDURE TO BE FOLLOWED FOR THE USE OF THIS SERVICE IS AS FOLLOWS:

- (a) Use VHF radio frequency 122.2 Mcs,
- (b) Call "Radar Assistance",
- (c) The subsequent call sign of the ground station will be the call sign given by the ground radar station,
- (d) After communication has been established with ground radar station, request the service desired,
- (e) If normal air defence commitments preclude the granting of the radar assistance, the ground station will transmit the word "UNABLE" and no further explanation will be given,
- (f) Notes:
 - (i) All speeds given are in knots,
 - (ii) All distances given are in nautical miles,
 - (iii) Initial contact with Radar Assistance should be made at the highest practicable altitude,
 - (iv) All bearings and headings are given in degrees magnetic.

6.4 RADAR ASSISTANCE TO AIRCRAFT IN DISTRESS OR EMERGENCY

6.4.1 The Department of National Defence through the use of Radar is prepared to give assistance to civil aircraft operating within the limits of the Canadian Air Defence Identification Zones and which are in distress or emergency.

6.5 When an aircraft is lost, or a state of distress or emergency exists, and

6.5.1 BOTH TRANSMITTER AND RECEIVER IS FUNCTIONING --

- (a) Use VHF or UHF frequency 121.5 Mcs or 243.0 Mcs,
- (b) Call "Radar Emergency" or "Mayday",
- (c) The subsequent call sign of the ground station will be the call sign given by the ground radar station,
- (d) After communication has been established with ground radar station, request the desired service giving nature of distress or emergency,
- (e) Continuous radar surveillance may be requested and communication with ground radar station maintained.

Note: The aircraft requesting assistance may be instructed to fly a particular pattern. This is to aid the radar operator in identifying the aircraft.

6.5.2 IF RECEIVER ONLY IS OPERATING -- fly a triangular pattern to the RIGHT (see diagram 1). Hold each heading for 2 minutes, (one (1) minute for jet aircraft). Complete a minimum of 2 such patterns before resuming original heading and then repeat at 20 minute intervals.

6.5.3 IF TRANSMITTER AND RECEIVER ARE BOTH INOPERATIVE -- fly a triangular pattern to the left in the same manner as described in paragraph 6.5.2 (see diagram 2).



Diagram 1



Diagram 2

6.6 In the case where a RECEIVER only is operating, courses to steer to the nearest landing place or such other advice as circumstances may dictate will be given by radio on VHF (121.5 Mcs) and UHF (243.0 Mcs) and by the nearest radio range station to the aircraft. Aircraft having only radio range receivers should tune to the frequency of the nearest radio range station (i.e. the loudest) and swing i.e., oscillate the tuning dial about this frequency until it is certain that the receiver is accurately tuned. Failure to receive a message should not cause alarm as lack of compliance with broadcast instructions will be readily seen and action will be taken as set out in the following paragraph.

6.7 If both TRANSMITTER AND RECEIVER are inoperative, an RCAF aircraft may intercept the aircraft in need of assistance and lead it to the nearest landing place. In this case, the INTERCEPTION SIGNALS described in Appendix I will be used.

- 6.8 If flying at a low altitude an attempt should be made to climb, as the greater the altitude of the aircraft, the better chance of its being detected.
- 6.9 If in a particular case it is not possible for the Royal Canadian Air Force to send out an intercepting aircraft, the flying of the triangular pattern will serve to position the distressed aircraft and thus narrow any field of search that may become necessary.
- 6.10 Unnecessary alerts have been caused by pilots flying in patterns similar to the triangular distress patterns. All pilots are therefore cautioned against any manoeuvres which might be taken by a Radar operator to mean a distress signal.



(R. W. Goodwin),
Director, Civil Aviation.

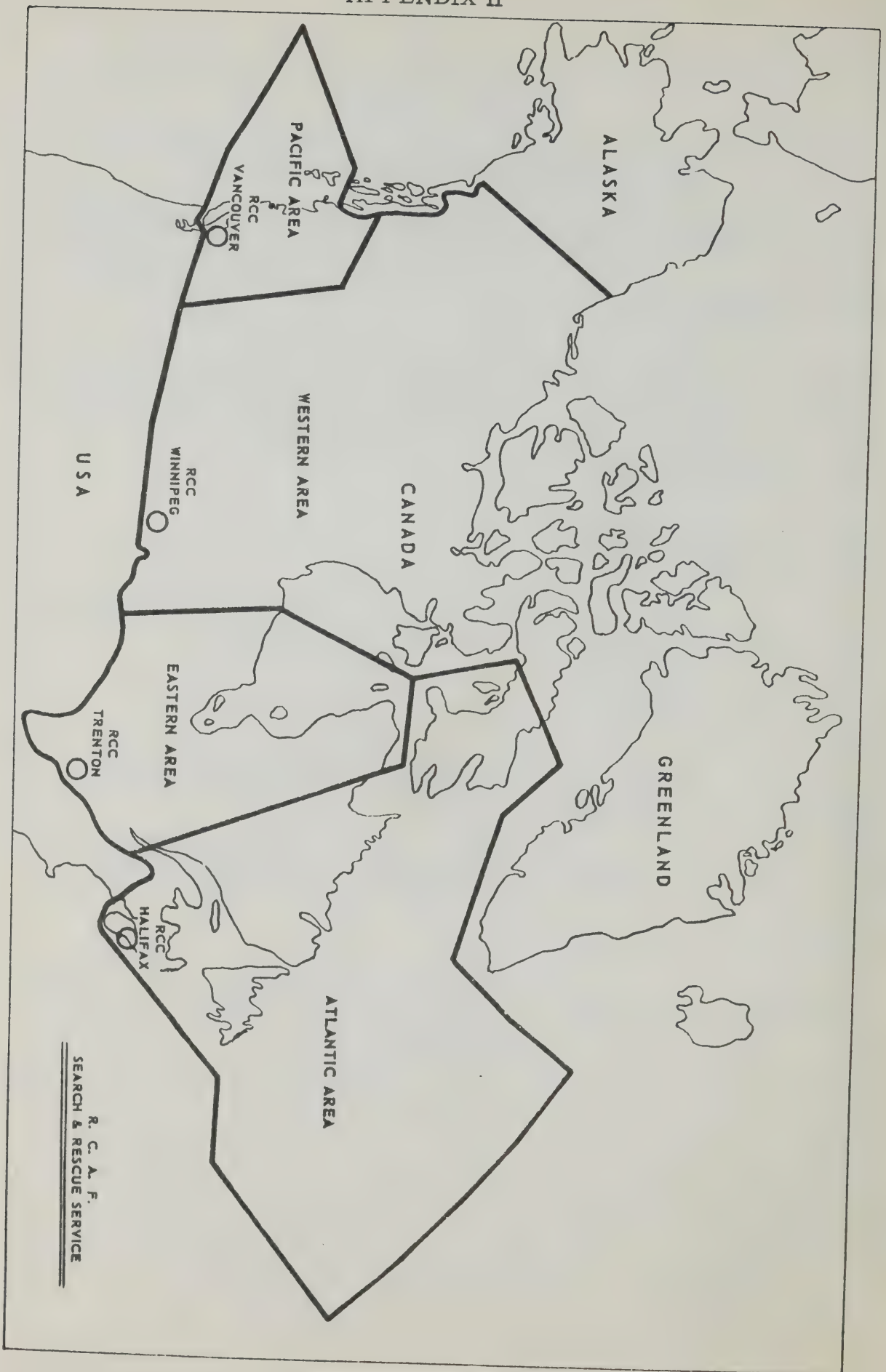
APPENDIX I

INTERCEPTION SIGNALS

Having been intercepted by an RCAF aircraft, and being unable to communicate by radio, the following signals will be used:

SIGNAL BY INTERCEPTED AIRCRAFT	MEANING	RESPONSE BY RCAF INTERCEPTOR
DAY - Porpoising NIGHT - Switching on landing lights and holding steady beam.	"In Distress".	DAY or NIGHT - use appropriate interception signal as shown below.
SIGNAL BY RCAF INTERCEPTOR	MEANING	RESPONSE BY INTERCEPTED AIR-CRAFT
DAY - Rocking wings from a position in front of intercepted aircraft and after acknowledgement a slow level turn on to the desired course. NIGHT - As day with the addition of a series of flashing lights at irregular intervals by any means available.	"Follow me".	DAY or NIGHT - Rocking wings and following.
DAY or NIGHT - If the intercepted aircraft is unable to maintain sufficient speed to follow the interceptor the interceptor will fly in the direction the intercepted aircraft should fly, circle to the <u>left</u> , and fly again in the proper direction.	"Fly in this direction".	Rocking wings, and maintain indicated direction.
DAY or NIGHT - When the area for descent is reached, the interceptor will circle to the <u>right</u> and descend.	"Descend in this area".	DAY or NIGHT - Rocking wings and following.
DAY - Circling aerodrome and lowering landing gear. NIGHT - As DAY showing steady lights if carried.	"Land at this aerodrome".	DAY or NIGHT - Same as interceptor, and proceed to land.
DAY or NIGHT - An abrupt break away upwards of 90° or more..	"Unable to assist you further - I must leave".	DAY or NIGHT Rocking of wings.

APPENDIX II



INFORMATION CIRCULAR



Airmanship ^{Government} Publication

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

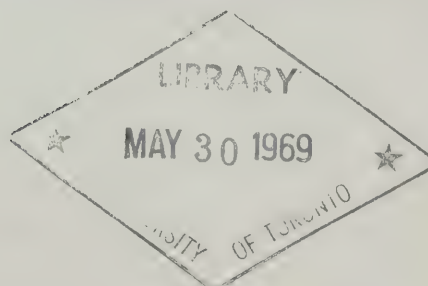
MISUSE OF RADAR VECTORS - HAZARD TO FLIGHT (Amending Information Circular 0/27/64)

Pilots have, on occasion, for practice purposes followed radar instructions issued to other pilots without realizing the potential hazard that accompanies such action.

It is a standard Air Traffic Control procedure to require aircraft to make turns for radar identification. However, when more than one aircraft target is observed making a turn, identification becomes difficult or impossible. Should misidentification be the result of more than one aircraft following the instructions issued by ATC it could be hazardous to the aircraft involved.

Should any pilot wish to obtain radar practice, however, he need only contact the appropriate area control centre or terminal control unit and request practice radar vectors. Pilots are assured that practice vectors will be issued by controllers to the extent that air traffic conditions will permit provided the aircraft is flying within radar coverage.

R. W. Goodwin,
Director, Civil Aviation.





Government
Publication



INFORMATION CIRCULAR

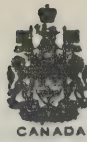
AIRCRAFT GENERAL



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Aircraft General

0/5/65

1st May

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DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

AIRCRAFT GENERAL

(Superseding Information Circulars 0/12/41, 0/55/41, 0/5/50, 0/40/52, 0/3/54, 0/11/57, 0/33/57, 0/6/58, 0/14/58, 0/16/58, 0/17/58, 0/25/58, 0/7/59, 0/24/59, 0/4/60, 0/6/60, 0/7/60, 0/9/60, 0/15/60, 0/34/61, 0/44/61, 0/6/62, 0/43/62, 0/10/63, 0/12/63, 0/26/63 and 0/37/63)

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SECTION I

EQUIPMENT

EMERGENCY EQUIPMENT - SPARSELY SETTLED AREAS

Air Navigation Order, Series V, No. 12, details the requirements for Flight Notification, Telecommunications Equipment, and Emergency Equipment for flight in sparsely settled areas.

The following items are suggested as useful additions:

- (a) spare axe handle,
- (b) honing stone or file,
- (c) ice chisel,
- (d) snow knife,
- (e) snow shovel,
- (f) flashlight with spare bulbs and batteries,
- (g) pack sack,
- (h) insect repellent,
- (i) copy of the Information Circular entitled: "Search and Rescue".

Whether or not fire-arms are carried is up to the operator.

The scale of equipment detailed in Order, Series V, No. 12 and suggested in this Circular should be carried for flights in unpopulated areas other than those already defined as Sparsely Settled Areas in the referenced Order.

The aircraft operator should use his own judgment regarding additional equipment on exceptionally long flights.

An operator contemplating flight into an unfamiliar area in sparsely settled territory should seek advice and information from people who know the area concerned. Locally stationed personnel of the RCMP, RCAF, DOT Regional Officials and local operators are happy to render assistance.

LIFE PRESERVING EQUIPMENT - OVER WATER OPERATIONS

Life preservers suitable for each person on board are required to be carried on all aircraft when taking off from and landing on water and on all single engined aircraft when flown over water beyond gliding distance from shore. Complete requirements including those for multi-engined aircraft may be found in the Life Saving Equipment Order, Air Navigation Order, Series II, No. 8.

Accident reports and routine inspections indicate that aircraft owners do not always comply with the requirements of the Life Saving Equipment Order. Life preservers, to serve the purpose for which they are carried, must be inspected at regular intervals, maintained in a serviceable condition, and stowed so as to be readily available in the event of an emergency.

To be approved, life jackets must conform to the following general requirements:

- (a) The total buoyance and the distribution of buoyancy elements shall be such that the jacket will support and hold the wearer with his face up and clear of the water. The jackets shall show no tendency to turn the wearer face down in the water.
- (b) The jacket shall be easy to put on over clothing.
- (c) The strength of any part of the jacket shall be sufficient to allow the wearer to be lifted from the water by it.
- (d) The jacket fabric, when wet, shall be a bright yellow, orange or red.

- (e) Life jackets carried on scheduled international flights, in accordance with Air Navigation Order Series II, No. 8 and ICAO Standards, Annex 6, shall be equipped with a means of electric illumination to help with search and rescue.
- (f) Inflatable life jackets must be designed so that when inflated they cannot slip off the wearer. They must not, however, have straps which pass between the wearer's legs.
- (g) The life jacket must not be so bulky that it would prevent the wearer from abandoning the aircraft.

Approved for use in aircraft are:

- (a) Department of Transport approved life jackets which conform to Canadian Government Specifications Board Specification 65-GP-7.
- (b) Life jackets conforming to United States Specification NAS-801 which have been tested and approved by the Department of Transport.

Application for type approval may be made to the Director, Civil Aviation, Department of Transport, No. 3 Temporary Building, Ottawa, Ontario.

APPROVED INFLATABLE LIFE PRESERVERS

<u>Manufacturer</u>	<u>Model</u>	<u>Canadian Representative</u>
Air Cruisers Company, P. O. Box 180, Belmar, New Jersey.	AD-4	Garrett Manufacturing Ltd., 4 Racine Road, Rexdale, Ontario.
TUL Canada Ltd., Park and Court Streets, Granby, Quebec.	50 NAS-801	Abercorn Aero Ltd., 2240 Beaconsfield Ave., N. D. G., Montreal, Quebec.
P. Frankenstein & Sons (Manchester) Limited, Beaufort (Air Sea) Equipment Ltd., Birkenhead, England.	Mark 5 Mark 6 Baby's Floating Survival Cot Aircrew Mark 4A Emergency Life Jacket Mark 7	Field Aviation Co. Ltd., 857 Bank Street, Ottawa, Ontario. British Mercantile Co., 720 West Hastings Street, Vancouver 1, B. C.

The following Inflatable Life Preservers previously approved but not currently being manufactured are acceptable providing they are in a serviceable condition. All inflatable products have an effective life depending to a large degree on the care they have received. Aircraft operators should follow the manufacturers' recommended inspection and maintenance procedures and in the case of life preservers more than 10 years old may be required to produce satisfactory evidence of serviceability.

<u>Manufacturer</u>	<u>Model</u>
Air Cruiser Co., Goodyear Tire Co., R. F. D. Ltd., Willis & Coiger Ltd., Beaufort (Air Sea) Equipment Ltd.	AD-1, AD-2, AD-3 Mark II 47, 50 NAS-801 (Now made by TUL Canada Ltd.) V-276 Mark 3 and 4 and Emergency Mark 4, 5 and 6
McLean Manufacturing Co.,	MV-101, 102, 103, 104.

APPROVED NON-INFLATABLE LIFE PRESERVERS

Department of Transport approved life jackets which conform to Canadian Government Specifications Board Specification 65-GP-7 are acceptable. These specifications became effective on July 3, 1964.

The following are manufacturers of Department of Transport approved life jackets:

Andre Sales Ltd., Vancouver, B.C.	Guelph Electric Hosiery Limited, Guelph, Ont.	J.J. Turner Co., Peterborough, Ont.
Smith-Anderson Co. Ltd., Montreal, Que.	Robinson Moulded Pro- ducts, Toronto, Ont.	Tarnoack Floating Products, St. Lin, Que.
Flight Line Quality Products, Limited, Campbellford, Ont.	John Leckie Co., Ltd., Toronto, Ont.	Windsor Manufacturing Company, Limited, Winnipeg, Man.
Guarantee Fit Inc., Outremont, Que.	Tapatco Co. Ltd., Magog, Que.	

HAND FIRE EXTINGUISHERS FOR USE IN AIRCRAFT

When selecting a hand fire extinguisher for use in aircraft, consider the most appropriate extinguishing agent for the type and location of fires likely to be encountered. Take account of the agent's toxicity, extinguishing ability, corrosive properties, freezing point, etc.

The toxicity ratings listed by the Underwriters' Laboratories for some of the commonly known fire extinguisher chemicals are as follows:

Bromotrifluoromethane	- Group 6	
Carbon dioxide	- Group 5	
Dibromodifluoromethane	- Group 4)
Bromochlormethane	- Group 3)
Carbon Tetrachloride	- Group 3)
Methyl bromide	- Group 2)

Should not be installed in aircraft

Hand fire extinguishers using agents having a rating in toxicity Groups 2 to 4 inclusive should not be installed in aircraft. Extinguishers in some of the older types of aircraft do not meet this standard and for such aircraft it is recommended that hand fire extinguishers employed agents in toxicity Group 5 or above be installed when renewing or replacing units.

Classification of Fires

Class A fires: Fires in ordinary combustible materials. On these water or solutions containing large percentages of water, are most effective.

Class B fires: Fires in flammable liquids, greases, etc. On these a blanketing effect is essential.

Class C fires: Fires in electrical equipment. On these the use of a non-conducting extinguishing agent is of first importance.

Types of Extinguishers

(1) Carbon Dioxide Extinguishers

Carbon dioxide extinguishers are acceptable when the principal hazard is a Class B or Class C fire. Carbon dioxide portable installations should not exceed five pounds of agent per unit to ensure extinguisher portability and to minimize crew compartment CO₂ concentrations.

(2) Water Extinguishers

Water extinguishers are acceptable when the principal hazard is a Class A fire and where a fire might smolder if attacked solely by such agents as carbon dioxide or dry chemical. If water extinguishers will be subject to temperature below 32° the water extinguisher must be winterized by addition of a suitable antifreeze.

(3) Vaporizing Liquid Extinguishers

Vaporizing liquid type fire extinguishers are acceptable when the principal hazard is a Class B or Class C fire.

(4) Dry Chemical Extinguishers

Dry Chemical extinguishers using a bi-carbonate of sodium extinguishant or Potassium Bicarbonate powder are acceptable where the principal hazard is a Class B or Class C fire.

Dry Chemical extinguishers using a so-called All Purpose Monoammonium Phosphate are acceptable where the hazard includes a Class A fire as well as Class B and Class C.

The size of the Dry Chemical extinguisher should not be less than two pounds. Only an extinguisher with a nozzle that can be operated either intermittently or totally by the operator should be installed.

Some abrasion or corrosion of the insulation on electrical instruments, contacts or wiring may take place as a result of using this extinguisher. Cleaning and inspection of components should be carried out as soon as possible.

Take care when using this extinguisher in crew compartments because they interfere with visibility while they are being used and because the nonconductive powders may be deposited on electrical contacts not involved in the fire. This can cause equipment failure.

ANTI-COLLISION LIGHTS

Increases in air traffic density and higher aircraft speeds have intensified the problem of maintaining adequate separation between aircraft in flight.

As a precautionary measure many aircraft owners have installed anti-collision beacons which emit high intensity flashes. These beacons make it possible for other flight crews to see the aircraft at greater distances.

While the Department does not now require the installation of anti-collision beacons for aircraft their installation is strongly recommended.

Where anti-collision lights are installed the following requirements must be met:

- (a) the lights shall be so located and of such intensity that the emitted light will not be detrimental to the crews' vision nor detract from the conspicuity of the navigation lights,
- (b) the system shall consist of sufficient lights to provide, insofar as is practical, 360° horizontal coverage around the aircraft. The field coverage shall extend in all directions within 30° above and below the horizontal plane of the aircraft.
- (c) the lights shall provide a high frequency flash,
- (d) the colour shall be such so as not to cause confusion with other lights on the aircraft or on the ground,
- (e) the light shall be placed in a position so that neither its rotating beams or their reflection will be in the pilot's normal line of vision. It has been found that the rotating beams can induce dizziness.

NOTE: In the case where flashing navigation lights and the anti-collision beacon are operating simultaneously, the direction and attitude feature of the navigation lights might cause confusion. Therefore, when the beacon is in use the navigation lights must be on steady.

USE OF HIGH VISIBILITY PAINT ON AIRCRAFT

It has been found that the use of high visibility paint helps to make aircraft more conspicuous during daylight hours. To be effective, reasonably large areas of the aircraft have to be painted and the paint renewed and maintained at regular intervals.

EMERGENCY EXIT LIGHTING

Incidents have occurred where passengers have had to use cigarette lighters and matches to find unlighted emergency exits. The use of open lights in a crash landing is of course extremely dangerous.

Airworthiness Directive No. 58-3 requires all commercial aircraft in excess of 12,500 pounds gross weight, which are used in carrying passengers at night to be equipped with a source or sources of light to illuminate all interior emergency exits.

Operators of all private aircraft (in excess of 12,500 pounds gross weight) engaged in carrying passengers at night are urged to conform with the requirements set forth in this directive.

LIGHTS - AIRCRAFT

Navigation or position lights are required by the Air Regulations, Division V, of Part V, to be displayed in all aircraft at night. "Night" means, in respect of any place in Canada, the period of time in any day when the centre of the sun's disc is more than six degrees below the horizon and in an area of Canada where the sun rises and sets daily, night may be calculated as the period of time commencing not less than one-half hour after sunset and ending not less than one-half hour before sunrise.

Under certain conditions of low visibility, especially at twilight, a hazard exists due to the difficulty of seeing aircraft on the ground or in the air in time to avoid a collision. There is also difficulty on controlled airports for the Airport Controller to see unlighted aircraft.

All pilots are, therefore, urged to turn on their navigation lights when these conditions are noticed, regardless of the time of day, and pilots of aircraft not equipped with lights should refrain from flying under such conditions on designated airways or within airport control zones.

AREA OF COMPASS UNRELIABILITY

In the "area of compass unreliability", defined in ANO Series V, No. 2, a magnetic compass is liable to serious error (deviation) due to the small directional property of the earth's magnetic field. It is strongly recommended that aircraft engaged in day VFR flying within this "area" be equipped with a good directional gyro and a means to check heading using the sun as reference. Such a means would be an Astro Compass, or an ephemeris of the sun's true bearing. (An ephemeris of this nature should be available from the Queen's Printer in the near future.)

Equipment requirements for night VFR and IFR flight within this "area" are stipulated in ANO Series II, No. 6 and No. 7.

FLYING CONTROL LOCKS

Serious accidents have occurred, caused directly by pilots failing to remove external or internal flying control locks prior to commencing take-off.

The primary causes of this type of accident are:

- (a) the installation of a control lock system of non-standard design which provides inadequate warning to the pilot; and
- (b) pilots failing to check full travel of all control surfaces prior to take-off.

In order to eliminate this type of accident, operators shall ensure that control lock systems presently in use are in accordance with the Flying Control Locks Order, Series II, No. 5 and are of approved design for the particular type of aircraft.

In addition, operators are requested to ensure that a complete pre-take-off check list is displayed in the cockpit of each aircraft. These check lists shall include the requirements of a visual and manual check of all control surfaces for free and unobstructed movement.

FUEL SELECTORS - BEECHCRAFT 18 AIRCRAFT

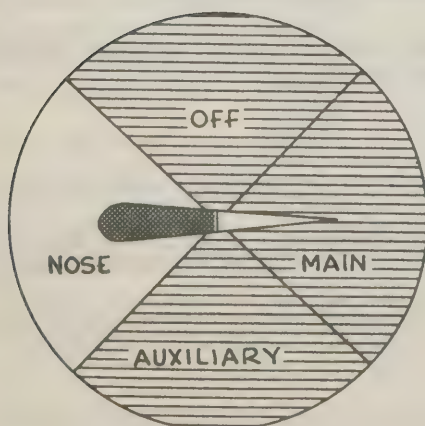
The attention of all operators and pilots of Beechcraft 18 aircraft is drawn to the possibility for error in selecting fuel tanks.

To select main tanks the points off both selectors must be facing inward. In the Beechcraft 18 it is possible to confuse which end of the selector should be facing inward and thus both engines could be selected to an almost empty nose tank instead of the main tanks.

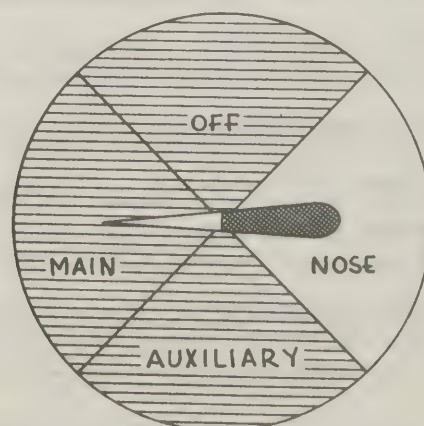
In order to improve safety it is recommended that:

- (a) the pointer end of the selector be painted in a contrasting colour to the opposite end (white or light green is suggested),
- (b) the nose quadrants be painted in a colour that contrasts with the remaining quadrants of the selector (yellow is suggested.)

BEECHCRAFT 18 FUEL SELECTORS



PORT



STARBOARD

SECTION II

OPERATING REQUIREMENTS

OPERATING REQUIREMENTS FOR AGRICULTURAL AIRCRAFT

The Department is prepared to recertify aircraft at higher gross weight, for agricultural purposes only. The special airworthiness requirements for certification are published in the Engineering and Inspection Manual. The special operating requirements for aircraft so certified, are given hereunder.

General

Agricultural aircraft certificated under Part II, Chapter I, Para. 1.4 of the Engineering and Inspection Manual shall be operated in accordance with the approved Aircraft Flight Manual or other approved documents and in accordance with the following requirements:

Limiting Weather Conditions

Aircraft operating in this category are eligible for flight during daylight hours and under VFR conditions only. Spraying or dusting operations shall not take place when the air is gusty or turbulent.

Performance

Taking-off: It shall be possible to reach a height of 50 feet in 0.8 of the field length and thereafter clear all obstacles by a vertical distance of 50 feet.

Landing: It shall be possible to land over a 50 foot screen in 0.6 of the field length.

Spraying or Dusting Speed: The spraying or dusting speed shall be at least 15 mph higher than the stalling or minimum steady flight speed.

Operating Limitations

Aircraft certificated in this category shall not be operated in any manner which will endanger public life and property. The pilot shall adjust the take-off weight to provide a safe margin of performance for the existing operating conditions, considering the take-off area, altitude, temperature and terrain.

No manoeuvre shall be performed that may induce abnormal stresses in the aircraft structure.

Permission must be sought through Regional Headquarters before operations may be carried out over populated areas. If operations are to be carried out in the vicinity of airports they must be authorized by the appropriate Air Traffic Control unit.

Persons other than the minimum crew necessary for agricultural operations shall not be carried.

Only minimum crew, equipment and materials used for agricultural purposes, or other similar specialized operations for which the aircraft is certified may be carried.

STALL CHARACTERISTICS OF THE DOUGLAS DC-3 AIRCRAFT

Douglas DC-3 pilots may not be entirely familiar with the stall characteristics of this aircraft.

Pilots, having experienced a gentle nose-down pitching accompanied by a slight roll at the stall, should understand that this characteristic holds only for the more forward centre of gravity loadings.

As the centre of gravity moves progressively aft, however, the stall characteristics gradually deteriorate until, with the centre of gravity at the aft limit, it is most likely that a roll will occur at the stall and that the rate of roll will increase rapidly.

Once the roll begins, it cannot be stopped with rudder and ailerons alone and the elevator control must be moved well forward to initiate recovery. Delay in taking this action may result in steep angles of bank and nose-down attitudes, incurring high load factors and excessive loss of altitude.

It should be emphasized that little or no stall warning may be apparent prior to the roll commencing.

CONSOLIDATED CANSO AIRCRAFT

Accidents have occurred to Canso aircraft due to the inadvertent operation of:

- (a) the undercarriage selector lever, and
- (b) the fuel/oil/hydraulic cut-off switches.

Undercarriage Selector Lever - Take full precautions to ensure against a malfunctioning undercarriage selector locking mechanism and to ensure that positive seating of the locking pin is made following every operation of the undercarriage selector.

Fuel/Oil/Hydraulic Cut-off Switches - In a number of Canso aircraft, these switches are poorly located and inadequately guarded and the operator should install cover guards or railing guards adequate to prevent the inadvertent operation of these switches.

AIRCRAFT FUEL

Fuel Grades and Specifications - The use of a fuel which does not meet the specification recommended for the aircraft engine involved, may seriously damage the engine and can cause inflight failure. The use of a fuel other than the specified aviation gasoline is contrary to a condition of the Certificate of Airworthiness and therefore a contravention of Air Regulations.

Common aircraft fuels in Canada are controlled by government specifications. Fuel identification can usually be accepted by colour as follows:

- (a) 80/87 Octane - Red
- (b) 100/130 Octane - Green
- (c) 108/135 Octane - Brown
- (d) 115/145 Octane - Purple
- (e) Turbo fuels - Straw or off yellow

Analysis by an approved laboratory is the only way to ensure positive proof of compliance if doubt exists. Laboratories require 4 gallon samples for a complete check to specification.

80/87 is a fuel with a low tetraethyl lead content, the maximum being 0.6 millilitres per imperial gallon. All others except turbo fuels may have up to 5.2 millilitres per gallon often with other blending agents to improve the anti-knock rating values. While the higher octane fuels can be obtained with lead contents lower than 3 m/l per gallon, unless authentic information is available indicating otherwise it is wise to consider the fuel to have the maximum permissible quantity of tetraethyl lead.

The use of a fuel with a higher lead content than that specified for the engine can cause trouble such as spark plug fouling.

FUEL HANDLING

Poor fuel handling practices can lead to inflight power failures.

When an operator is refuelling from a drum or other local storage, precautions have to be taken.

Water is heavier than fuel. Thus if mixed together and then left to stand the water will separate out and sink to the bottom. When fuel and water have been agitated, as often happens during refuelling, it may take some time for the water to separate out.

In large commercial installations water separators are incorporated in the fuel handling equipment; however, for small operations such as refuelling from drums the following precautions are recommended:

- (a) The stand pipe in the drum should be at least an inch clear of the bottom so that any water which has settled will not be drawn up by the pump.
- (b) The residual fuel in the bottom of the drum should not be used unless it is carefully inspected and proven to be free from contaminants.
- (c) A chamois lined filter funnel should be used and any reduction in flow through this filter should be reason to suspect water contamination. If this happens stop pumping and investigate.

(d) First quality chamois should be used. These should be changed frequently and whenever they become hard or discoloured by impurities.

(e) Funnels should be carefully stored and handled to prevent contamination.

Rate of flow through a clean chamois should be between 15 to 25 gallons per minute, depending on the area exposed to the gasoline, the quality of the chamois and care in handling. Fouled chamois may first be washed with soap and water and then thoroughly dried. They can also be cleaned by soaking and washing in unleaded gasoline then rinsed in a further bath of clean gasoline.

During daily aircraft inspection a reasonable quantity of fuel should be drawn from the lowest point in the fuel system into a glass container. If water is present it will be easily seen at the bottom of the container.

In a recent FAA test where the fuel system of a popular high wing monoplane was mocked up in transparent plastic it was proved that about nine ounces of water remained in the fuel tank after both the belly drain and the gasolater strainer had ceased to show any sign of water. The only way this residual water could be removed was by draining the fuel tank sump. The addition of water to the fuel tank under observation showed that the water did not flow down the fuel line to the strainer.

If there is any suspicion that water exists in an aircraft's fuel system detailed checking of entire system should be carried out until it is proven clear of contamination.

In drums or storage tanks, water may be detected by the use of water finding paste, (available through the oil companies) and used according to directions.

Fires and Explosions

Pound for pound aviation fuel is more explosive than dynamite. However, the explosive range of fuel is comparatively narrow. To be explosive the mixture must contain between one and six percent fuel vapor by volume when mixed with air. Mixtures below this range are too weak and those above are too rich to explode.

The mixture in the space above the fuel in a gas tight compartment is usually too rich for combustion but in extremely cold conditions there may be a mixture lean enough to be explosive.

In sub-freezing weather conditions static charges can build up more readily than in warmer conditions. Untreated turbo fuel, when agitated as in refuelling operations, can build up greater static electricity charges than gasoline and is therefore, under certain conditions, potentially more dangerous. Most turbo fuel supplied in Canada contains an anti-static additive.

To avoid fires and explosions operators should use great care in refuelling operations. There should be effective electrical bonding between the aircraft, the fuel source, piping or funnel and the ground before refuelling is begun.

USE OF ALCOHOL IN FUEL SYSTEMS

Alcohol will mix with water and the resulting mixture if high enough in alcohol content can be burned in an aircraft engine. However, the mixture may result in carburetion problems and can cause corrosion in the carburetor. In addition, relatively small amounts of alcohol added to fuel will usually have no real effect.

For example, the amount of water which would be neutralized by a 4 oz. tin of isopropyl alcohol poured into 10 gallons of fuel would be .0025% of the total volume or about .04 ozs. of water and the ratio deteriorates with an increase in the volume of water. 2% water in 75% gasoline would require 23% isopropyl alcohol or about 2.3 gallons in the previously cited 10 gallon example.

The use of alcohol in fuel is not recommended and is a poor substitute for proper fuel handling and management.

AIRCRAFT LOADING COMPUTATIONS - WEIGHT AND BALANCE REPORT - LOADING GUIDE

When loading an aircraft it is essential that the maximum gross weight is not exceeded and that the centre of gravity of the loaded aircraft is within the permissible range and remains so during the flight. To assist the operations of medium and light aircraft to comply with these requirements, the following information has been prepared:

Aircraft Loading Computations

Before starting the calculations, necessary information should be gathered:

(a) from the current weight and balance report for the specific aircraft you may obtain:

- (1) the empty weight of the aircraft;
- (2) the centre of gravity position of the empty aircraft;
- (3) a list of the equipment included in the empty weight of the aircraft;

and (b) from the Department of Transport Type Approval, the FAA Specification, or the Flight Manual for the specific type, the following additional information may be obtained:

- (4) the maximum weight permissible and centre of gravity range for the configuration being considered;
- (5) the location of the datum;
- (6) the distance from the datum of -
 - (i) each crew and passenger seat;
 - (ii) each baggage compartment and its capacity;
 - (iii) each fuel tank, its capacity, and the amount of unusable fuel which must be considered;
 - (iv) the oil tank(s) capacity and the amount of unusable oil.

The unusable fuel and oil mentioned above is included in the empty weight of the aircraft.

Standard Weights - may be used unless the actual weights are known. The following average passenger weights have been approved:

- | | |
|---|----------|
| (a) Adult male ----- | 165 lbs. |
| (b) Adult female----- | 143 lbs. |
| (c) Children 3-11 years inclusive ----- | 77 lbs. |
| (d) Infants ----- | 22 lbs. |

Fuel and Oil - When obtaining data from the FAA Specifications, it should be remembered that the capacity of tanks is expressed in U.S. gallons, which should be converted to Imperial gallons. This may be done by multiplying the number of U.S. gallons by .83268 or by 5/6 to obtain the number of Imperial gallons. The standard weights of fuel and oil are as follows:-

	lb. / U. S. gal.	lb. / Imp. gal.
(a) Aviation gasoline.....	6	7.2*
(b) JP4	6.69	8.02*
(c) Kerosene	6.87	8.25*
(d) Lubricating Oil	7.5	9.0*
(e) Water	8.35	10.00*

*NOTE: The weights shown are for the maximum density of the fuel and shall be used for weight calculations unless the actual density or adjusted mean density is known.

Centre of Gravity Range - The centre of gravity range is usually expressed in inches from the datum, i.e., (+39.5") to (+45.8"); however, in a few aircraft specifications the C. of G. Range may also be expressed in percentage of MAC (Mean Aerodynamic Chord). The MAC is the mean chord of the wing, the dimensions and location of which, relative to the datum may be found in the specification for the type of aircraft. In cases where the loaded centre of gravity range is not constant for all weights up to the maximum, the permissible limits are usually shown by means of a graph, such as this example -

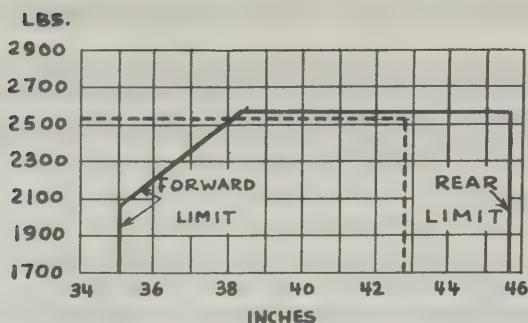


FIG. 1

The two dotted lines on the graph, vertical to show C. of G. position and horizontal to indicate loaded weight must meet within the permissible range outlined on the graph. The graph shown is for the landplane configuration of the aircraft. In the seaplane version of the model it is possible that different weights or C. of G. range will be specified; if so, additional limit lines will be shown on the graph.

Empty Centre of Gravity Range - The specifications for certain aircraft types may specify an empty C.G. range and state - "When the empty C. of G. falls within a specified range, computation of Critical fore and aft C. of G. positions is unnecessary". This indicates that if the empty C.G. is within the empty C.G. range, and the aircraft is loaded according to the standard configuration, it will be within the loaded C. of G. limits. The term 'Standard Configuration' means that baggage compartment or area maximum weights are not exceeded, and that all passengers and crew are located in normal seating arrangements for the type.

Normal Loading Example - The aircraft shown in Figure 2 is a typical light aircraft, with a maximum weight of 2550 lb. and a centre of gravity range of -

(+39.5) to (+45.8) at 2550 lb.

(+35.0) to (+45.8) at 2050 lb.

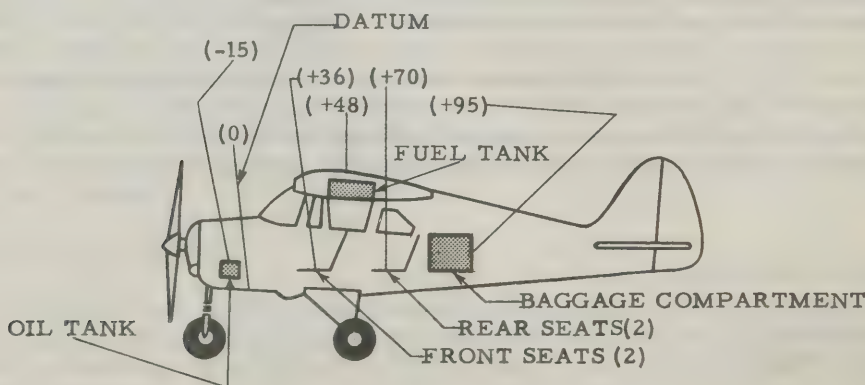


FIG. 2

A sample loading calculation for this aircraft is:

	Weight (lb)	Arm (inches)	+Moment - Moment (lb x in) (lb x in)
Aircraft empty weight & centre of gravity	1552	+37.0	+57424
Pilot and passenger at 165 lb	330	+36	+11880
One passenger (rear seat) at 165 lb	165	+70	+11550
Baggage (max) 120 lb	120	+95	+11400
Fuel (usable) 46 Imp. Gal. at 7.2 lb. (full)	331.2	+48	+15897.6
Oil (usable) 1.8 gals at 9 lb	16.2	-15	-243
TOTALS	2514.4		+108151.6 - 243.0 <hr/> 107908.6

$$\text{Loaded Centre of Gravity} = \frac{\text{moment}}{\text{weight}} = \frac{107908.6}{2514.4} = (+42.91'')$$

The loaded weight and centre of gravity of 2514.4 lb. and (+42.91'') are within the limits specified.

Adverse Loading Computations - In order to avoid the necessity of calculating the exact centre of gravity position each time the aircraft is loaded, it is necessary to compute typical loading conditions showing where the centre of gravity of the loaded aircraft will be -

(a) as far forward as possible

(b) as far aft as possible,

and still be within the permissible range.

Example: The Most Rearward Loading Condition

	Weight (lb)	Arm (inches)	+Moment - Moment (lb x in) (lb x in)
Aircraft empty wt. & centre of gravity.....	1552	+37.0	+57424
Pilot at 165 lb	165	+36	+ 5940
2 passengers at 165 lb	330	+70	+23100
Baggage (max. permiss. in compt) 120 lb	120	+95	+11400
Baggage lashed on front seat	35	+36	+ 1260
Fuel (usable) 46 Imp. Gal. at 7.2 lb	331.2	+48	+15897.6
Oil (usable) 1.8 Imp. Gal. at 9 lb	16.2	-15	-243
TOTALS	2549.4		+115021.6 - 243.0 <hr/> +114778.6

$$\text{Most rearward C. of G.} = \frac{114778.6}{2549.4} = 45.02$$

NOTE - The centre of gravity of an aircraft, which has been loaded in accordance with the above example, will move forward as the flight progresses, due to the consumption of fuel, and therefore, a reduction of weight at station +48 (fuel tank). The effect of the reduction of the weight of oil, in this example, is negligible.

EXAMPLE - The Most Forward Loading Condition

	Weight (lb)	Arm (inches)	+Moment (lb x in)	-Moment (lb x in)
Aircraft empty wt. & centre of gravity	1552	+37.0	+57424	
Pilot and passenger at 165 lb	330	+36.0	+11880	
*Fuel, 15.62 Imp. Gal. at 7.2 lb	112.5	+48	+ 5400	
Oil (usable) 1.8 Imp. Gal. at 9 lb	16.2	-15		-243
TOTALS	2010.7		+74704	
			- 243	
			+74461	

C. of G. for the most forward loading = $\frac{74461}{2010.7} = +37.03''$

*The minimum amount of fuel in pounds which may be used for adverse loading calculations is obtained by dividing the maximum continuous rated horsepower by two. The horsepower of the engine used in the example is $225 \text{ BHP} / 2 = 112.5 \text{ lb} = 15.62 \text{ Imp. Gals.}$

NOTE - One reason for calculating the most forward loading condition for aircraft of this class is to determine if it is possible for the centre of gravity to move forward, beyond the permissible limit, as the fuel is consumed. In the example shown, this is not possible, but in other types it is possible when flying without baggage or passengers in the rear seats, and suitable ballast should be installed to compensate for this condition.

In the examples shown normal seat and baggage compartment stations have been used to determine the arms of the weights and so calculate the moments, however, if the aircraft is carrying freight instead of passengers, it is often found advisable to divide the cabin into areas with dimensions and location being measured relative to the datum. The arm of the centre of the area being used to calculate the moment of the load in this particular area. A station diagram of the specific aircraft type, as found in the repair or maintenance manuals is of great assistance when determining area stations.

Weight and Balance Report - If alterations have resulted in an estimated 2% change in the empty weight, or if the aircraft has a gross weight in excess of 3,000 lbs. and five years has elapsed since the last weighing, the aircraft must be weighed and a new weight and balance report prepared. The Engineering and Inspection Manual should be consulted for details.

An acceptable form for a weight and balance report is attached as Appendix "A".

Loading Guide - A simple, loading guide may be prepared by the operator using the specific data for the type of aircraft being operated with which a pilot could quickly compute, the loaded, centre of gravity and total weight of the aircraft.

The form should contain all of the unchanging data such as weight, arm (C. of G.) and moment of the empty aircraft and appropriate spaces for the variable data. A sample form for a loading guide is shown on page 19, of Appendix "A". The shaded area indicates where the unchanging data should be recorded.

APPENDIX "A"

AIRCRAFT WEIGHT AND BALANCE REPORT

REFERENCES:

- (I) FAA AIRCRAFT SPECIFICATION _____ OR AIRCRAFT TYPE APPROVAL _____
 (II) ENGINEERING AND INSPECTION MANUAL, PART I, CHAPTER 5, PARAGRAPH 5.2.

1. AIRCRAFT IDENTIFICATION

REGISTRATION	SERIAL NO.	MAKE & MODEL
--------------	------------	--------------

DATUM LOCATION

LEVELLING MEANS

UNDERCARRIAGE	WHEELS	SKIS	FLOATS
INSTALLATION DWG NO.			

2. WEIGHT COMPUTATION - AIRCRAFT ON (WHEELS, SKIS, FLOATS)

POINT OF SUPPORT	HORIZONTAL DISTANCE BETWEEN -	GROSS WT	TARE WT	NET WT
RIGHT SCALE	(MAIN SCALE AND DATUM) (D) INCHES			LBS.
LEFT SCALE	(MAIN SCALE AND DATUM) (D) INCHES			LBS.
FRONT SCALE	(FRONT AND MAIN SCALES) (L) INCHES			(F) LBS.
OR				
REAR SCALE	(MAIN AND REAR SCALES) (L ₁) INCHES			(R) LBS.
TOTAL EMPTY WEIGHT				(W) LBS.

3. CENTRE OF GRAVITY COMPUTATION

WITH FRONT SCALE USED, C OF G = $D - \frac{F \times L}{W}$ = _____ INCHES AFT OF DATUM

WITH REAR SCALE USED, C OF G = $D + \frac{R \times L_1}{W}$ = _____ INCHES AFT OF DATUM

EMPTY WEIGHT CENTRE OF GRAVITY IS

INCHES AFT OF DATUM

EMPTY WEIGHT INCLUDES FIXED BALLAST	WEIGHT	ARM
WEIGHED AT	TYPE OF SCALE	

DATE

SIGNATURE

LICENCE NUMBER

ENGINEER TO COMPLETE THE EQUIPMENT LIST ON THE OTHER SIDE OF THE PAGE

LIST ALL CHANGEABLE ITEMS REQUIRED BY SPECIFICATION OR MODIFICATION.

[illegible]

USE EXTRA PAGES AS REQUIRED

4.

PERMISSIBLE AIRCRAFT LIMITS

	MAX. ALL-UP WEIGHT	LOADED C OF G	
		FROM	TO
WHEELS			
SKIS			
FLOATS			

LOADING GUIDE

	WEIGHT	ARM	MOMENT
AIRCRAFT EMPTY WEIGHT AND C OF G			
FUEL _____ IMPERIAL GALLONS (MAX. USABLE _____ IMP. GAL. AT 7.2 LBS.)			
OIL _____ IMPERIAL GALLONS (MAX. USABLE _____ IMP. GAL. AT 9 LBS.)			
PILOT			
() PASSENGER(S)			
() PASSENGER(S)			
BAGGAGE (MAX. _____ LBS. IN COMPT.)			
CARGO			
EMERGENCY EQUIPMENT			
TOTALS			

$$\text{CENTRE OF GRAVITY} = \frac{\text{TOTAL MOMENT}}{\text{TOTAL WEIGHT}} = \frac{\quad}{\quad} = \quad$$

NOTE:

1. WITH FULL FUEL, MAXIMUM LOAD (INCLUDING PILOT) = _____ POUNDS.

2. WITH ALL SEATS OCCUPIED (AVERAGE ADULTS) & NO BAGGAGE, MAX. FUEL = _____ (IMP.) GALLONS.

AVERAGE PASSENGER WEIGHTS

Operators may use the following for the purpose of computing passenger weights:

(a) Adult male	165 lbs.
(b) Adult female	143 lbs.
(c) Children 3-11 yrs. inclusive	77 lbs.
(d) Infants	22 lbs.

IDENTIFICATION OF AIRCRAFT

For the purpose of identification, civil aircraft of Canadian Registry are required to bear five-letter markings commencing with the letters "CF". For radio identification and call sign, civil aircraft are required to employ the letters of their registration markings.

To meet existing requirements, aircraft operated by the Defence Services are allotted five-letter identification for radio purposes from the following blocks:-

VGAAA-VGZZZ	Royal Canadian Navy
VCAAA-VCZZZ	Royal Canadian Airforce

REGULATIONS CONCERNING WATER FOR DRINKING AND CULINARY PURPOSES ON AIRCRAFT

The following are extracts from Department of National Health and Welfare Act - Potable Water Regulations for Common Carriers as contained in Order in Council P.C. 1954-1213 dated August 18, 1954.

"REGULATIONS CONCERNING WATER FOR DRINKING AND CULINARY PURPOSES ON CERTAIN AIR, LAND AND WATER CONVEYANCES"

1. These regulations may be cited as the Potable Water Regulations for Common Carriers.

Interpretation

2. In these regulations,
 - (a) "common carrier" includes any employee, servant or agent of a common carrier;
 - (b) "conveyance" means any aircraft, train, vessel, motor vehicle or other mode of transportation that is used in
 - (i) international traffic,
 - (ii) interprovincial traffic,
 - (iii) traffic on the seacoast of Canada and on the salt water bays, gulfs and harbours of Canada, and
 - (iv) traffic on the Great Lakes and inland water of Canada;
 - (c) "Department" means the Department of National Health and Welfare;
 - (d) "Minister" means the Minister of National Health and Welfare;
 - (e) "potable water" means water that is free of pathogenic bacteria and is of such a composition that, when five ten-millilitre portions thereof are examined according to the standard procedure outlined in the latest edition of Standard Methods for the Examination of Water and Sewage, published by the American Public Health Association, not more than one portion thereof shows the presence of organisms of the coliform group, that is to say, the most probable number is not greater than 2.2 per 100 millilitres;

- (f) "potable water system" means the equipment used on a conveyance for handling, treating, storing and distributing potable water;
- (g) "raw water" means water that is not potable water; and
- (h) "vessel" means any boat, ship or other mode of transportation by water that is used in any traffic mentioned in paragraph (b).

Supply of Water and Ice

- 3. No common carrier shall supply raw water for use on any conveyance for drinking or culinary purposes.
- 4. No common carrier shall supply for use with potable water or food on any conveyance ice that is not
 - (a) made from potable water or obtained from a source approved by the Minister, and
 - (b) stored and handled in a clean and sanitary manner.

Responsibility of Common Carrier

- 5. No common carrier shall operate or cause to be operated a conveyance unless the potable water system of such conveyance is
 - (a) operated without any connection to any system for handling, storing or distributing raw water,
 - (b) identified as a potable water system by signs on storage tanks, outlets and filling connections,
 - (c) protected from tampering by unauthorized persons, and
 - (d) maintained in a sanitary condition.
- 6. Every common carrier who operates or causes to be operated a conveyance shall
 - (a) clean, sterilize with live steam or a chlorine solution and rinse with potable water the potable water system of such conveyance before it is used for the first time;
 - (b) clean, sterilize with live steam or a chlorine solution and rinse with potable water the potable water system whenever it has been exposed to contamination in any way or has contained raw water as revealed by the examination referred to in paragraph(e) of section 2;
 - (c) clean, sterilize with live steam or a chlorine solution and rinse with potable water the tanks and containers of the potable water system before they are used again after they have been entered into for inspection, repairs or maintenance;
 - (d) subject to paragraph (f), clean, sterilize with live steam or a chlorine solution and rinse with potable water at least once a month the potable water system that is being used;
 - (e) empty, clean, sterilize with live steam or a chlorine solution and rinse with potable water at least once every two weeks the water coolers and other chilling devices of the potable water system that is being used.
- 7. No common carrier who operates or causes to be operated a conveyance shall permit on it
 - (a) any careless or insanitary handling of potable water from the source of supply thereof to the points of consumption;
 - (b) the existence of by-passes around the treatment or purification apparatus of the potable water system;
 - (c) the existence of a raw water supply in a galley or kitchen quarters unless
 - (i) the outlet of such raw water supply is located at a point less than eighteen inches above the level of the deck or floor, and

- (ii) a sign has been posted at the outlet indicating that the water is to be used only for the purpose of washing decks or floors;
- (d) the storage of potable water in tanks that are exposed to contamination by or from
 - (i) pipes that pass through them,
 - (ii) raw water,
 - (iii) toilets, or
 - (iv) any other potential source of pollution; or
- (e) the existence of raw water outlets unless there has been posted at each such outlet a conspicuous and legible sign that states that the water available is not to be used for drinking or culinary purposes.

Inspection and Certificates

10. (1) An official of the Department duly authorized by the Minister may examine and inspect from time to time the potable water and potable water system of any conveyance that is operated by a common carrier.

(2) Where the Minister is not satisfied that the potable water or the potable water system comply with the requirements of these regulations, he shall forward to the common carrier who owns the conveyance a notice containing particulars of the manner in which the requirements of the regulations are not complied with.

(3) When a common carrier receives a notice under sub-section (2) he shall take whatever action is necessary to ensure that the requirements of these regulations specified in the notice are complied with.

Sources of Supply of Water

12 The Minister may establish a list of the sources of supply of water used by common carriers in Canada and may furnish upon request, to the owner of a conveyance, a copy of this list together with information respecting the condition and standard of quality of the water available.

Penalties

13. Every person who knowingly violates any of the provisions of these regulations is guilty of an offence and is liable on summary conviction to a fine not exceeding two hundred dollars to imprisonment for a term not exceeding three months. "

QUARANTINE AND SANITARY MEASURES - COMMUNICABLE DISEASES

Where the pilot-in-command has reason to suspect or has knowledge that any passenger is suffering from one of the six major quarantinable diseases (small pox, plague, cholera, typhus, relapsing fever, yellow fever) listed in the Canadian Quarantine Regulations he shall comply fully with the requirements of the Canadian Quarantine Regulations and the International Sanitary Regulations and such passengers shall not be removed from Canada without the consent of a Quarantine Officer, and any sanitary measures applicable to the aircraft contents and personnel shall be carried out. Where the pilot-in-command has reason to suspect or has knowledge of any crew member or passenger suffering from a major quarantinable disease while such aircraft is approaching Canada from a foreign country he shall report such information to the Quarantine Officer at the airport of arrival before any person is allowed to leave the aircraft including any person who may have entered the aircraft subsequent to its arrival.

Any pilot, carrying patients who may be suspected of suffering from a communicable disease, must obtain from the physician in charge of the case or other proper medical authority, assurance that all necessary precautionary measures have been taken and that, by the use of disinfectants or otherwise, no danger of spreading the disease to other passengers remains. This instruction is in no way intended to make difficult the present custom of lending aid in emergency, but is merely to prevent the possibility of the spread of communicable diseases through the lack of reasonable precautions.

SECTION III

MISCELLANEOUS

CANADIAN AIRWORTHINESS COUNCIL

From time to time, members of the Canadian Airworthiness Council receive suggestions and requests from aircraft owners, operators and other interested parties regarding items for discussion by the council.

In order to ensure that all such items are properly recorded and documented for council consideration, they should be channeled through the Chairman.

Consequently anyone having an airworthiness or related item of general consequence to Canadian Civil Aviation should advise the Chairman in writing. Complete details must be forwarded together with all supporting documents and arguments so that all members can be advised and given time to study the item prior to the meeting at which it will be discussed.

Correspondence should be directed to:

The Chairman,
Canadian Airworthiness Council,
Department of Transport,
Ottawa, Ontario.

INTRODUCTION OF JOURNEY LOG BOOKS AND AIRCRAFT TECHNICAL LOGS

The Journey and Aircraft Log Book, the Engine Log Book and the Propeller Log Book formerly issued by this Department are now being replaced with a Journey Log Book and an Aircraft Technical Log Book.

The new Journey Log and Technical Log are now available and their use is mandatory with effect from July 1, 1965.

The only exceptions are as follows:

- (a) An Aircraft Journey Log other than the kind issued by this Department may be used provided it contains at least the information set forth in the 'standard' Journey Log and has been approved by the Director, Civil Aviation Branch, Department of Transport.
- (b) An Aircraft Technical Log will not be required for an aircraft which is maintained in accordance with an Approved System of Maintenance and for which a Continuing Certificate of Airworthiness is in force, the system of record keeping being maintained in this case being considered adequate.

The Journey Log and the Technical Log including replacement sections may be obtained from the Department of Printing and Stationery, Distribution Branch, Government Printing Bureau, Ottawa or from the appropriate Regional Office, Air Services Branch, Department of Transport. A cheque or money order made payable to the Receiver General must accompany all orders and the appropriate catalogue numbers should be quoted.

A brief description and the price of the new logs is as follows:

- (a) The Aircraft Journey Log - This log is similar to the Journey and Aircraft Log it replaces and will be used to record the particulars of all flights made by the aircraft for which it is kept. The Aircraft Journey Log Book will be carried on board the aircraft on each flight.

<u>Item</u>	<u>Catalogue No.</u>	<u>Price</u>
Aircraft Journey Log	T52-10	\$2.50

- (b) The Aircraft Technical Log - This log will replace the present Engine and Propeller Logs and contains the following Sections in a loose leaf binder:

<u>Item</u>	<u>Catalogue No.</u>	<u>Price</u>
Binder	T52-2364	\$2.50
Section I Airframe Log	T52-2364/1	.50
Section II Record of Installations and Modifications to Aircraft	T52-2364/2	.50
Section III Engine Log	T52-2364/3	.50
Section IV Propeller Log	T52-2364/4	.50

Depending upon the number of engines, Section III will be made up of one to four Engine Logs and any time an engine is changed the Engine Log for that engine will be withdrawn from Section III and replaced with the log pertaining to the new engine. The same will apply in the case of Section IV, the number of Propeller Logs varying in accordance with the number of propellers on the aircraft.

When ordering the technical log particularly specify the catalogue numbers for the binder and each section of the Log as well as the number of engine and propeller log sections. The cost of a Technical Log for a single, twin or four engine aircraft is as follows:

Single engine aircraft	\$4.50
Twin engine aircraft	\$5.50
Four engine aircraft	\$7.50

AIRCRAFT AND PILOT LOG BOOKS - TIME KEEPING

FLIGHT TIME is the total time from the moment the aircraft first moves under its own power for the purpose of taking-off until it comes to rest at the end of the flight.

AIR TIME is the period of time commencing when the aircraft leaves the supporting surface and terminating when it touches the supporting surface at the next point of landing.

FLIGHT TIME should be recorded in all Pilot Log Books.

FLIGHT TIME and/or AIR TIME should be recorded in the Aircraft Journey Log Book and the Engine and Propeller sections of the Aircraft Technical Log Book.

Either air time or flight time may be used as a basis for calculating the time between airworthiness inspections.

Time should be recorded to the nearest 5 minutes, e.g. 1 hour 5 minutes or to the nearest six minutes using the decimal system as follows:

6 minutes	-----	.1 hour
12 "	-----	.2 "
18 "	-----	.3 "
24 "	-----	.4 "
30 "	-----	.5 "
36 "	-----	.6 "
42 "	-----	.7 "
48 "	-----	.8 "
54 "	-----	.9 "
60 "	-----	1.0 "

SERVICING AND INSPECTION - PRIVATE AIRCRAFT

In accordance with the Engineering and Inspection Manual, a person who does not hold an Aircraft Maintenance Engineer's Licence is permitted to service and inspect privately registered aircraft on a limited basis.

A log entry must be made when such work is done and must be signed by the person doing the work. The entry must include a list of replacements and a certification that locking devices have been replaced.

The work permitted is limited to:

Servicing: Refuel; change oil and clean filters; clean and lubricate engine and airframe; change and clean spark plugs (if torque wrench is used); check compression; top up hydraulic fluid; check battery electrolyte level and specific gravity; replace tires; reinstall wheels and reinstall simple skis on fixed landing gears (not including reinstallation of ski wheels or any ski where hydraulics are involved); clean carburetor air intake filters; replace generator drive belts; change battery; change light bulbs and replace fuses; change instruments (with the exception of flight and primary engine instruments); make small fabric repairs; clean fuel filters; drain sumps.

Inspection: A visual check for general condition, security of attachments, cracks, leaks and the full and free movement of all controls. An engine run-up may be made to check the proper functioning of the engine instruments.

The foregoing should take care of normal requirements up to, but not including a periodic check. All repairs, periodic checks and servicing other than the above, must be performed by or under the supervision of and certified by a qualified Aircraft Maintenance Engineer.



R. W. Goodwin,
Director, Civil Aviation.



INFORMATION CIRCULAR

COMMERCIAL OPERATIONS



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Commercial Operations

0/6/65

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

COMMERCIAL OPERATIONS

(Superseding Information Circulars 0/43/51, 0/2/52, 0/19/61,
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SECTION I

STANDARDS FOR OPERATION OF AIRCRAFT (SCHEDULED)

Appropriate material from the following standards shall be implemented by inclusion in the Operations Manual of a licensed operator in form and manner satisfactory to the Minister.

DEFINITIONS

When the following terms are used herein they shall have the following meanings:-

Airport Meteorological Minima. Minimum heights of cloud base and minimum values of visibility which are prescribed for the purpose of determining the usability of an airport either for take-off or landing.

Aeroplane. A power-driven heavier-than-air aircraft, deriving its lift in flight from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

Aircraft. Any machine capable of deriving support in the atmosphere from reactions of the air.

Aircraft Flight Manual. A manual, associated with the certificate of airworthiness, containing limitations within which the aircraft is to be considered airworthy, and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

Alternate Airport. Any airport specified in a flight plan to which the flight may proceed when a landing at the regular airport becomes inadvisable.

Crew Member. A person assigned by an operator to duty on an aircraft during flight time.

Flight Crew Member. A licensed crew member charged with duties essential to the operation of an aircraft during flight time.

Flight Time. The total time from the moment the aircraft first moves under its own power for the purpose of taking off until the moment it comes to rest at the end of the flight.

Landing Surface. That part of the surface of an airport which has been declared available for the normal ground or water run of aircraft landing in a particular direction.

Operational Control. The exercise of authority over initiation, continuation, diversion or termination of a flight.

Pilot-in-Command. The pilot responsible for the operation and safety of the aircraft during flight time.

Regular Airport. An airport which may be listed in the flight plan as an airport of intended landing.

Take-off Area. A take-off surface augmented in the direction of take-off by a portion of the airport, which has been declared available for accelerate-stop purposes for aircraft intending to take off in that direction.

Take-off Surface. That part of the surface of an airport which has been declared available for the normal ground or water run of aircraft taking off in a particular direction.

NOTE - For additional definitions see Section 101, Part 1, of the Air Regulations.

GENERAL

- 2.1 An operator shall ensure that his employees when abroad know that they must comply with the laws, regulations and procedures of the States in which his aircraft are operated.
- 2.2 An operator shall ensure that each of his pilots is familiar with the regulations and procedures pertinent to the performance of his duties prescribed for the areas to be traversed, the airports to be used and the air navigation facilities relating thereto. The operator shall ensure that other members of the flight crew are familiar with such of these regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aircraft.

- 2.3 An operator or his designated representative shall have responsibility for operational control.
- 2.4 If an emergency situation which endangers the safety of the aircraft or persons necessitates the taking of action which involves a violation of local regulations or procedures by any crew member, the pilot-in-command shall notify the Minister without delay. If the incident occurs outside of Canada, the pilot-in-command shall submit a report on any such violations to the appropriate authority of such State; in that event, the pilot-in-command shall also submit a report to the Minister. Such reports shall be submitted as soon as possible and normally within ten days.
- 2.5 Explosives and other dangerous articles other than those necessary for the operation or navigation of the aircraft or for the safety of the personnel or passengers on board shall not be carried in an aircraft, refer to Information Circular 0/22/64.
- 2.6 Operators shall ensure that pilots-in-command have available on board the aircraft all the essential information concerning the search and rescue services in the area over which the aircraft will be flown as promulgated by the Royal Canadian Air Force.

NOTE - Information on search and rescue services may be obtained on request from the appropriate Rescue Co-ordination Centre. Refer to Information Circular 0/36/63.

FLIGHT OPERATIONS

3.1 Operating Facilities.

- 3.1.1 An operator shall ensure that a flight will not be commenced unless ground or water facilities, sufficient and operated adequately for the safety of the aircraft and the passengers, are available.
- 3.1.2 An operator shall ensure that any inadequacy of the facilities as described in 3.1.1 is reported to the authority immediately responsible for them.

3.2 Operating Supervision. An operator shall establish and maintain a method of supervision of flight operations. The method shall be approved by the Minister.

- 3.2.1 Operations Manual. An operator shall provide, for the use and guidance of operations personnel, an Operations Manual in accordance with 8.1. The Operations Manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual. The contents of the Operations Manual and any revisions there-to must be approved by the Minister before becoming effective.

- 3.2.2 Instruction - General. An operator shall ensure that all operations personnel are properly instructed regarding their particular duties and responsibilities and the relationship of such duties to the operation as a whole.

- 3.2.3 Flight Check System. An operator shall establish a check system to be used by the flight crew prior to and on take-off, in flight, on landing, and in emergency, to ensure that the operating procedures contained in the Operations Manual and the Aircraft Flight Manual or other documents associated with the certificate of airworthiness are followed exactly.

- 3.2.4 Minimum Flight Altitudes. An operator shall establish the minimum safe flight altitudes for his operations, which shall be approved by the Minister.

- 3.2.4.1 The operator shall establish such minimum altitudes only after careful consideration of the probable effects of the following factors on the safety of the operation in question:

- (a) The accuracy with which the position of the aircraft can be determined;
- (b) The probable inaccuracies in the indications of the altimeters used;
- (c) The characteristics of the terrain (e.g. sudden changes in elevations);

(d) The probability of encountering unfavourable meteorological conditions (e.g. severe turbulence and descending air currents);

(e) Possible inaccuracies in aeronautical charts.

3.2.5 Fuel and Oil Records. An operator shall maintain fuel and oil records for each flight to be retained for a period of six months.

3.2.6 Crew.

3.2.6.1 For each flight, the operator shall designate one pilot to act as pilot-in-command.

3.2.6.2 An operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the competence of his pilots. Such checks shall be performed twice within any period of one year. Any two such checks which are similar and which occur within a period of four consecutive months shall not alone satisfy this requirement.

3.2.6.3 An operator shall maintain current records of the flight time of each of his pilots.

3.2.6.4 An operator shall establish limitations on the flight time of flight crew members in accord with Section III of these Standards. These limitations shall be such as to ensure that fatigue, either occurring in a flight or successive flights or accumulating over a period of time, does not endanger the safety of a flight.

3.2.6.5 An operator shall ensure that all crew members are instructed and periodically examined in the use of the emergency and lifesaving equipment required to be carried and that they are drilled in emergency evacuation of the aircraft used.

3.2.7 Passengers. An operator shall ensure that passengers are made familiar with the location and use of:

- (a) safety belts;
- (b) emergency exits;
- (c) life jackets, if the carriage of life jackets is prescribed; oxygen equipment; and
- (d) other emergency equipment provided for individual use.

3.2.7.1 The operator shall inform the passengers of the location and general manner of use of the principal emergency equipment carried for collective use.

3.2.7.2 In an emergency during flight passengers shall be instructed in such emergency action as may be appropriate to the circumstances.

3.3 Flight Preparation. A flight shall not be commenced until flight preparation forms have been completed certifying that the pilot-in-command is satisfied that:

- (a) the aircraft is airworthy;
- (b) the instruments and equipment prescribed in Chapter 4, for the particular type of operation to be undertaken, are installed and are sufficient for the flight;
- (c) a maintenance release as prescribed in 6.7 has been issued in respect of the aircraft;
- (d) the weight of the aircraft is such that the flight can be conducted safely, taking into account the flight conditions expected;
- (e) the load carried is so distributed and secured that the aircraft is safe for the flight;
- (f) a check has been completed indicating that the operating limitations on the aircraft can be complied with for the flight to be undertaken;

(g) the standards of 3.3.1 relating to flight planning have been complied with. Completed flight preparation forms shall be kept by an operator for a period of six months.

3.3.1 Flight Planning. An operational flight plan shall be completed for every intended flight indicating the flight can be conducted with safety and that the Standards of 3.3.2 and 3.3.3 have been complied with. This plan shall be approved and signed by the pilot-in-command and shall be filed with the operator or his agent.

3.3.2 Weather Conditions.

3.3.2.1 A flight to be conducted in accordance with visual flight rules shall not be commenced unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under visual flight rules are, and will continue to be, such as to make it possible for the flight to be conducted in accordance with visual flight rules.

3.3.2.2. A flight to be conducted in accordance with instrument flight rules shall not be commenced unless the available meteorological information indicates that meteorological conditions at, at least one airport specified in the flight plan will, at the expected time of arrival, be at or above the airport meteorological minima listed in the Canada Air Pilot or an approved Operations Manual for that airport when used as an alternate.

3.3.2.2.1 In special cases where the airport of intended landing is isolated and there is no available alternate airport, the operator shall comply with the requirements of 3.3.3.1(c).

3.3.2.3 Unless otherwise provided in the Operations Manual and approved by the Minister, a flight in accordance with the instrument flight rules shall not be commenced unless the available meteorological information indicates that meteorological conditions at one alternate airport will be at or above the airport meteorological minima listed in the Operations Manual for that airport, at the expected time of arrival.

3.3.2.4 The meteorological minima for an airport, as contained in the Operations Manual shall not be lower than those established by the Minister, except when specifically approved by the Minister.

3.3.2.5 A flight to be operated in known or expected icing conditions shall not be commenced unless the aircraft is equipped to cope with such conditions.

3.3.3. Fuel and Oil Supply.

3.3.3.1 A flight shall not be commenced unless, considering wind and other meteorological conditions expected during the flight at the altitudes specified in the operational flight plan, at least sufficient fuel and oil are carried:

- (a) under visual flight rules and under instrument flight rules, when an alternate is not required, to fly to the airport of intended landing and thereafter to fly for forty-five minutes at normal cruising speed;
- (b) under instrument flight rules and when an alternate is specified to fly to the airport of intended landing and thence to an alternate airport or to fly to an alternate airport by any predetermined point and thereafter, in either case, for two hours at normal cruising speed; however, when adequate intermediate aerodromes and meteorological information are available the fuel and oil need only be sufficient to fly to the aerodrome of intended landing and thence to an alternate and thereafter for forty-five minutes at normal cruising speed;

NOTE - The requirements of 3.3.3.1 (b) above should be considered as applicable to cases where flight under actual instrument conditions is necessary and not to cases where an instrument flight plan is filed solely for the protection afforded by Air Traffic Control with regard to traffic separation.

- (c) under instrument flight rules and where the aerodrome of intended landing is isolated and no suitable alternate is available to fly to the airport of intended landing and thereafter to fly for two hours at normal cruising speed.

NOTE - Section 3.3.3.1 (c) applies to specific meteorological conditions not normally found or applied within Canada, however, certain locations may qualify but application of this Standard must be approved on an individual basis.

- 3.3.3.2 Fuel and oil in excess of any of the minima specified in 3.3.3.1 shall be carried when there are indications that additional fuel and oil will be required because of expected circumstances, such as traffic delays.

NOTE - These fuel and oil requirements are minima for aeroplanes equipped with reciprocating engines. Fuel and oil reserves for aeroplanes equipped with turbine type engines will require special consideration to account for the particular operating characteristics of this type of engine.

3.3.4 Oxygen Supply.

NOTE - Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in this text are as follows:

Absolute Pressure	Metres	Feet
700 mbs.	3,000	10,000
620 mbs.	4,000	13,000

- 3.3.4.1 A flight to be operated at altitudes at which the atmospheric pressure in personnel compartments will be less than 700 mbs. shall not be commenced unless sufficient stored breathing oxygen is carried to supply:
- (a) the crew for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 mbs. and 620 mbs.;
 - (b) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 mbs.
- 3.3.4.2 A flight to be operated with pressurized aircraft shall not be commenced unless an immediately available emergency supply of stored breathing oxygen is carried to supply the flight crew members, in the event of loss of pressurization, for any period in excess of 30 minutes that the atmospheric pressure in any compartment occupied by them would be between 700 mbs. and 620 mbs., and for any period that the pressure would be below 620 mbs.
- #### 3.4. In Flight Procedures.
- 3.4.1. Airport Meteorological Minima. A flight shall not be continued towards the airport of intended landing unless the latest available meteorological information indicates that conditions at that airport, or at least one alternate airport, will, at the expected times of arrival, be at or above the meteorological minima specified for such airports in the Operations Manual.
- 3.4.1.1 Except in case of emergency an aircraft shall not continue its approach to landing at any airport beyond a point at which the limits of the meteorological minima specified for that airport in the Operations Manual would be infringed.
- 3.4.2 Meteorological Observations. So far as is possible, weather observed en route shall be reported at prescribed times or points as requested by the Department of Transport.
- 3.4.3. Hazardous Flight Conditions. Hazardous flight conditions encountered en route shall be reported to the appropriate aeronautical station as soon as possible. The reports so rendered shall give such details as may be pertinent to the safety of other aircraft.

- 3.4.4 Pilots at Controls. Each required flight crew member on flight deck duty shall remain at his station while the aircraft is taking off or landing, and while it is enroute, except when the absence of one member is necessary for the performance of duties in connection with operating the aircraft or when action which will contribute to the safety and efficiency of the flight requires that he be absent from his station. Each flight crew member shall keep his seat belt fastened when at his station.
- 3.4.5 Use of Oxygen. All flight crew members when engaged in performing duties essential to the operation of an aircraft in flight shall use continuously the breathing oxygen supplied for their use during any period in excess of 30 minutes that the atmospheric pressure in compartments occupied by them is between 700 mbs. and 620 mbs. and at all times when the pressure is less than 620 mbs.

NOTE - Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in this text are as follows:

Absolute Pressure	Metres	Feet
700 mbs.	3,000	10,000
620 mbs.	4,000	13,000

3.5 Duties of Pilot-in-Command.

- 3.5.1 The pilot-in-command shall be responsible for the operation and safety of the aircraft and for the safety of all persons on board, during flight time.
- 3.5.2 The pilot-in-command shall ensure that the flight check system specified in 3.2.3. is complied with in detail.
- 3.5.3 The pilot-in-command shall be responsible for reporting all known or suspected defects in the aircraft, to the operator, at the termination of the flight.
- 3.5.4 The pilot-in-command shall be responsible for the maintenance of the Journey Log Book.

AIRCRAFT INSTRUMENTS AND EQUIPMENT

- 4.1 In addition to the instruments and equipment prescribed in Airworthiness Standards approved by the Minister, the instruments and equipment prescribed in the following paragraphs shall be installed in aircraft according to the aircraft used and to the circumstances under which the flight is to be conducted.
- 4.2 All Aircraft on all Flights Shall be Equipped with:
- (a) an accessible and adequate first-aid kit; the first-aid kit shall include: a handbook on first-aid, bandages, antiseptic gauze, adhesive plaster, absorbent cotton, safety pins, tourniquet, and haemostatic bandage, scissors, haemostatic forceps, water-miscible antiseptic, analgesic, stimulant and remedy for burns;
 - (b) at least one portable fire extinguisher if the pilot's compartment is remote from the passenger compartment;
 - (c) means of ensuring that the following information and instructions are conveyed to passengers:
 - (i) when seat belts are to be fastened;
 - (ii) when and how oxygen equipment is to be used, if the carriage of oxygen is required;
 - (iii) restrictions on smoking;
 - (iv) location and use of life belts, if the carriage of life belts is required;
 - (v) location and method of opening emergency exits;

- (d) spare electrical fuses of each rating used, equal in number to 25 per cent of the number installed, or three of each rating, whichever is the greater;
- (e) the following manuals, charts and information:
 - (i) the Aircraft Flight Manual for the aircraft, or, if such a manual does not exist, other documents containing performance data required for the operation of the aircraft;
 - (ii) the Route Guide for the route to be flown;
 - (iii) current charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted;
 - (iv) the ground-air signal codes for search and rescue purposes.

4.3 All Aircraft on Flights over Water.

4.3.1 Seaplanes. All seaplanes for all flights shall be equipped with:

- (a) one life belt, or equivalent individual floatation device, for each person on board, stowed in a position easily accessible from his seat and an additional number equal to at least one-fifth of the number of persons on board, stowed in a readily accessible position near the exits;
- (b) equipment for making the sound signals prescribed in the International Regulations for the Prevention of Collisions at Sea, where applicable;
- (c) one sea anchor (drogue).

NOTE - "Seaplanes" includes amphibians operated as seaplanes.

4.3.2 Landplanes. All landplanes when used over routes on which the aircraft may be over water and beyond gliding distance from the shore, except during take-off and initial climb, shall be equipped with one life belt, or equivalent individual floatation device, for each person on board, stowed in a position easily accessible from his seat; however, the Minister may grant specific exemptions from this requirement in the case of multi-engined aircraft when operated over water but not more than 20 minutes, at cruising speed away from shore. See Air Regulations para 538 and ANO Series II No. 8 para 4

NOTE - "Shore" includes shore bound ice capable of bearing the weight of the aircraft.

NOTE - "Landplanes" includes amphibians operated as landplanes.

4.3.3 All Aircraft on Long Range Flights. In addition to the equipment prescribed in 4.3.1 or 4.3.2 whichever is applicable, all aircraft when used over routes on which the aircraft may be over water shall be equipped in accord with ANO Series II No. 8.

4.4. All Aircraft on Flights over Undeveloped Areas. All aircraft when operated across areas where search and rescue would be especially difficult shall be equipped with such signalling devices, a portable radio transmitter capable of being operated by unskilled personnel, and life saving equipment including means of sustaining life, as are appropriate to the flight to be undertaken. See ANO Series V No. 12.

4.5 All Aircraft on High Altitude Flights.

NOTE: Approximate altitude in the Standard Atmosphere corresponding to the values of absolute pressure used in this text is as follows:

Absolute Pressure	Metres	Feet
700 mbs.	3,000	10,000

4.5.1 An aircraft intended to be operated with atmospheric pressures less than 700 mbs. in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 3.3.4.1.

- 4.5.2 An aircraft intended to be operated at altitudes at which the atmospheric pressure is less than 700 mbs., but which is provided with means of maintaining pressures greater than 700 mbs. in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 3.3.4.2.
- 4.6 All Aircraft in Icing Conditions. All aircraft shall be equipped with anti-icing facilities when operated in circumstances in which icing conditions are reported to exist or are expected to be encountered.
- 4.7 All Aircraft Operated in Accordance with Instrument Flight Rules. All aircraft when operated in accordance with instrument flight rules, or when the aircraft cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with:
- (a) a gyroscopic rate-of-turn indicator combined with an instrument which will indicate acceleration along the transverse axis of the aircraft;
 - (b) a gyroscopic bank and pitch indicator;
 - (c) a gyroscopic direction indicator;
 - (d) means of indicating whether the power supply to the gyroscopic instruments is working satisfactorily;
 - (e) two sensitive pressure altimeters;
- NOTE - A sensitive altimeter of any type fitted in accordance with Airworthiness Standards approved by the Minister may be included in the two here prescribed.
- (f) a means of indicating in the flight crew compartment the outside air temperature;
 - (g) a time-piece with a sweep-second hand;
 - (h) one airspeed indicating system with means of preventing malfunctioning due to either condensation or icing;
 - (i) a rate-of-climb and descent indicator.
- 4.7.1 Those instruments that are used by any one pilot shall be so arranged as to permit the pilot to see them readily from his station, with the minimum practicable deviation from the position and line of vision which he normally assumes when looking forward along the flight path.
- 4.8 All Aircraft When Operated at Night. All aircraft, when operated at night, shall be equipped with:
- (a) all equipment specified in 4.7;
 - (b) equipment for displaying the lights prescribed in the Air Regulations;
 - (c) two landing lamps;
 - (d) illumination for all instruments and equipment that are essential for the safe operation of the aircraft and are used by the flight crew;
 - (e) lights in all passenger compartments;
 - (f) an electric torch for each crew member station.

NOTE - Aircraft not certificated in an ICAO category which are equipped with a single landing lamp having two separately energized filaments will be considered to have complied with 4.8 (c). See ANO Series II No. 6.

AIRCRAFT RADIO EQUIPMENT

- 5.1 An aircraft when operated in accordance with visual flight rules shall be provided with radio equipment capable of conducting two-way communication for airport control purposes.
- 5.2 An aircraft operated over routes on which navigation is not or cannot be accomplished by visual reference to land marks, or when operated in accordance with instrument flight rules, shall be provided with radio equipment;
- (a) capable of conducting two-way communication from a distance of at least 25 nautical miles, with airport control at each regular and alternate airport, having airport control and at which it is intended to take-off or land;
 - (b) capable of conducting two-way communication at any time during flight with appropriate stations when flying in control zones and control areas and, when outside control zones and control areas, with at least one aeronautical station;
 - (c) capable of receiving meteorological information at any time during flight;
 - (d) capable of receiving signals from radio aids to navigation;
 - (i) to enable the aircraft to navigate in accordance with its flight plan; and
 - (ii) to enable the aircraft to navigate in accordance with the instructions from Air Traffic Control.
- 5.3 On flights in which it is intended to land in instrument flight conditions an aircraft shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance at each airport at which it is intended to land in instrument flight conditions. See ANO Series II No. 7.
- 5.4 The provision and installation of the radio equipment which is carried in order to comply with 5.2 (a) or 5.2 (c) or 5.2 (d) or 5.3 shall be so arranged that the failure of a component will not preclude receiving the communications and signals specified therein.
- 5.5 The provision and installation of the radio equipment which is carried in order to comply with 5.2 (b) whenever the aircraft is operated over routes along which airports with usable landing aids do not exist in sufficient numbers to permit diversion from any point on the route, shall be so arranged that the failure of a component will not preclude receiving the communications specified therein.
- NOTE - The provisions of 5.4 and 5.5 should not be interpreted as requiring duplication of equipment for each function, but rather the ability to perform the functions required by alternative means already provided in the aircraft for other purposes.
- 5.6 The requirements of 5.1, 5.2, 5.4 and 5.5 are considered fulfilled if the ability to conduct the communications specified therein is established during radio operating conditions which are normal for the route.
- 5.7 When the required ground radio facilities are not available and the Minister is satisfied that a flight can be conducted with safety without effecting the communications specified in 5.2 (c), the Minister may grant exemptions from these requirements.

AIRCRAFT MAINTENANCE

- 6.1 Organization. An operator shall ensure that there is provided an organization including trained staff, workshops and other equipment and facilities to maintain his aircraft in an airworthy condition when in use.
- 6.2 Inspection. An operator shall ensure that there is provided a system of inspection to ensure that all maintenance, overhaul, alterations and repairs which affect airworthiness, are effected as prescribed in the Maintenance Manual.

6.3 Maintenance Manual.

- 6.3.1 An operator shall ensure that there is provided, for the use and guidance of maintenance organizations and personnel, a Maintenance Manual containing the information specified in paragraph 8.2.
- 6.3.2 An operator shall ensure that the Maintenance Manual is amended or revised as is necessary to keep the information contained therein up-to-date.
- 6.3.3 Copies of all revisions and amendments of a Maintenance Manual shall be furnished promptly to all organizations or persons to whom the manual has been issued.
- 6.4 Training. An operator shall ensure that all maintenance personnel are instructed regarding the maintenance methods to be employed, in particular when new or unfamiliar equipment is introduced into service.
- 6.5 Licensing. Each person charged with the responsibility of certifying as to the airworthiness of an aircraft shall hold an appropriate and valid licence.
- 6.6 Alterations and Repairs. All alterations and repairs shall be effected in accordance with methods appropriate to the aircraft concerned.
- 6.7 Maintenance Release. A Maintenance Release shall be completed and signed by a person or persons qualified to certify that the maintenance work has been completed satisfactorily and in accordance with the methods prescribed in the Maintenance Manual.

6.8 Records - An operator shall ensure that the following records are kept:

- (a) in respect of the major components of his aircraft:
 - (i) the total time in service,
 - (ii) the date of the last overhaul,
 - (iii) the date of the last inspection,
- (b) in respect of those instruments and equipment, the serviceability and operating life of which are determined by their time in service:
 - (i) such records of the time in service as are necessary to determine their serviceability or to compute their operating life,
 - (ii) the date of the last inspection.

6.8.1 These records shall be kept for a period of ninety days after the end of the operating life of the unit to which they refer.

6.9 Application. For the purpose of this Chapter "aircraft" shall include: power plants, propellers, components, accessories, instruments, equipment and apparatus including emergency equipment.

AIRCRAFT FLIGHT CREW

7.1 Qualifications.

- 7.1.1 Before a pilot acts as pilot-in-command of an aircraft on a particular route for which he has not been previously qualified:
 - (a) he shall have been certified as competent to fly that route by a pilot who has proven his knowledge of the route and his ability to fly the route;
 - (b) he shall have made two one-way trips over that route within the preceding twelve months, including one trip within the preceding sixty days, either as co-pilot in any type of operations or as pilot-in-command in other than a scheduled operation;

- (c) he shall have demonstrated to the operator, knowledge of the terrain, the seasonal meteorological conditions, the communication and navigation facilities and procedures and the location of search and rescue facilities, which are associated with the route;
- (d) he shall have performed within the preceding twelve months:
 - (i) in flight, the established instrument approach procedures at each regular airport, if the airport is to be used under instrument flight conditions;
 - (ii) in flight or by simulated means, the established instrument approach procedures at each other airport which may be used during the operation under instrument flight conditions;
 excepting those airports having instrument approach to land procedures identical to those which he has demonstrated his competency to perform

NOTE - At any airport where the surrounding terrain presents special difficulties, such established instrument approach procedures should be performed in flight.

- 7.1.2 On routes where exceptionally severe meteorological conditions (e.g., monsoons) occur during certain seasons of the year, a pilot shall not act as a pilot-in-command unless he has had previous experience as pilot in such conditions.
- 7.1.3 A pilot previously qualified to act as pilot-in-command on a particular route shall not continue to act as pilot-in-command on that route unless he has made two one-way trips over that route within the preceding twelve months as pilot-in-command or co-pilot, and unless he complies with the requirements of (d) in 7.1.1.
- 7.1.4 When an operation is commenced over a new route, the Minister may grant exemptions from the requirements of 7.1.1 (a) and 7.1.1 (d). No fare-paying passengers shall be carried on flights covered by such exemptions.
- 7.2 Composition of the Flight Crew.
- 7.2.1 The flight crew shall not be less than that specified in the Operations Manual. The flight crew shall include flight crew members in addition to the minimum numbers specified in the certificate of airworthiness of the aircraft or the Aircraft Flight Manual or other documents associated with the certificate of airworthiness, when necessitated by consideration related to the type of aircraft used, the type of operation involved and the duration of flight between points where flight crews are changed.
- 7.2.2 Radio Operator. The flight crew shall include at least one member who holds a valid licence, issued by the Minister or issued or rendered valid by the State of Registry, authorizing him to operate the type of radio transmitting equipment to be used.
- 7.2.3 Flight Engineer. When a separate flight engineer's station is incorporated in the design of an aircraft, the flight crew shall include at least one flight engineer especially assigned to that station, unless the duties associated with that station can be satisfactorily performed by another flight crew member, without interference with his regular duties.
- 7.2.4 Flight Navigator. The flight crew shall include at least one member who holds a flight navigator licence in all operations where navigation cannot be accomplished by the use of visual or non-visual ground aids.

MANUALS, LOGS AND RECORDS

- 8.1 Operations Manual. An Operations Manual provided in accordance with 3.2.1 shall contain at least the following:
 - (a) instructions outlining the responsibilities of operations personnel pertaining to the conduct of flight operations;
 - (b) the flight crew for each stage of all routes to be flown including the designation of the succession of command;

- (c) emergency flight procedures;
- (d) the minimum safe flight altitudes for each route to be flown;
- (e) meteorological minima for each of the airports on the routes to be flown and that:
 - (i) are likely to be used as regular or alternate airports; and
 - (ii) being suitable, may have to be used in emergency;
- (f) the circumstances in which a radio listening watch is to be maintained;
- (g) a list of the navigational equipment to be carried;
- (h) specific instructions for the computation of the quantities of fuel and oil to be carried on each route, having regard to all circumstances of the operation including the possibility of the failure of one or more power plants while en route;
- (i) a route guide for each route flown, containing information relating to communication, navigation aids, airports, in-flight procedures, and such other information as the operator may deem necessary for the proper conduct of flight operations.

8.2 Maintenance Manual. A Maintenance Manual provided in accordance with 6.3 shall contain the following information in respect of the aircraft used:

- (a) procedures for servicing and maintenance;
- (b) the frequency of each check, overhaul or inspection;
- (c) the responsibilities of the various classes of skilled maintenance personnel;
- (d) the servicing and maintenance methods which may be prescribed by, or which require the prior approval of, the Minister.
- (e) the procedure for preparing the Maintenance Release, the circumstances under which this release is to be issued and the personnel required to sign it.

8.3 Maintenance Release. A Maintenance Release shall contain a certification as to the satisfactory completion of maintenance work carried out in accordance with the methods prescribed in the Maintenance Manual.

8.4 Records of Emergency and Survival Equipment Carried. Operators shall at all times have available for immediate communication to rescue co-ordination centres, lists containing information on the emergency and survival equipment carried on board any of their aircraft engaged in international air navigation. The information shall include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of the emergency portable radio equipment.

AIRCRAFT OPERATING LIMITATIONS

9.1 General.

- 9.1.1 An aircraft shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its Aircraft Flight Manual or other documents associated with the certificate of airworthiness.
- 9.1.2 When foreseeable hazards not specifically covered by the provisions of this chapter exist, the operator shall take such practicable precautions as are necessary to ensure that the general level of safety, contemplated by these provisions, is maintained.
- 9.1.3 A flight shall not be commenced unless performance information provided in the Aircraft Flight Manual, or in the case of 9.3 such other performance information as the Minister may deem appropriate, indicates that the relevant Standards of 9.2 or 9.3 can be complied with for the flight to be undertaken.

9.2 Applicable to Aeroplanes corresponding to ICAO Transport Category A and such other aeroplanes as have been approved for operation in accordance with the provision of this paragraph.

9.2.1 Take-off.

9.2.1.1 Elevation. The elevation of the airport shall be within the range for which maximum take-off weights have been set forth in the Aircraft Flight Manual.

NOTE - The performance data in the Aircraft Flight Manual will normally be given in terms of "altitude" (i.e., altitude in the Standard Atmosphere, or pressure altitude). In compliance with 9.2.1.1, 9.2.1.2 and 9.2.1.6.2b, the value of "altitude" to be assumed in using the take-off performance data is to be the elevation of the airport.

9.2.1.2 Weight. The take-off weight shall not exceed the maximum take-off weight specified in the Aircraft Flight Manual for the elevation at which the take-off is to be made.

9.2.1.3 Accelerate-stop Distance. The accelerate-stop distance determined from the Aircraft Flight Manual shall not exceed a length within the take-off area along which the ground or water is suitable to be used for accelerate-stop purposes by the aeroplane involved.

9.2.1.4 Take-off Distance. The distance required to attain a height of 10.5 metres (35 feet) above the take-off area, with the critical engine becoming inoperative at the critical point, as determined from the Aircraft Flight Manual, shall not exceed the length of the take-off area, except that in exceptional circumstances when there is an area within the boundaries of the airport beyond the end of the take-off area that has been declared suitable for climb to 15 metres (50 feet), the distance required may be increased accordingly.

9.2.1.5 Take-off Path. The take-off path with the critical engine becoming inoperative at the critical point, as determined from the Aircraft Flight Manual shall indicate that the aeroplane;

- (a) when reaching the end of the take-off area, or, in the case of the exception provided in 9.2.1.4, the end of the additional area declared available, can clear all obstacles within 60 metres (200 feet) on either side of the flight path by 10.5 metres (35 feet) vertically, and,
- (b) after passing the end of the take-off area or the end of any additional area declared available in accordance with 9.2.1.4, can clear by not less than a vertical margin of 10.5 metres (35 feet) which increases uniformly, all obstacles lying within a distance uniformly increasing from 60 metres (200 feet) on either side of the flight path, until the prescribed clearance for en route flight can be complied with.

9.2.1.6 Application.

9.2.1.6.1 Where the performance information relating to variation with temperature is available in the Aircraft Flight Manual, operators shall operate the aircraft in accordance with such information. Where such information is not available, operators shall submit a proposed method for approval in order to demonstrate that adequate safety margins are being applied.

9.2.1.6.2 In applying 9.2.1.3, 9.2.1.4 and 9.2.1.5 the accelerate-stop distance, the take-off distance and the take-off path as determined from the Aircraft Flight Manual shall be those corresponding to:

- (a) the take-off weight of the aeroplane;
- (b) the elevation of the airport;
- (c) not more than 50 per cent of the reported wind component along the take-off path and opposite to the direction of take-off and not less than 150 per cent of the reported wind component in the direction of take-off.

9.2.2 En route.

9.2.2.1 The rate of climb at a height of 300 metres (1000 feet) above obstacles at all points along the route or planned diversions therefrom as determined from the Aircraft Flight Manual, shall not be less than:

0.0126 V_{s1} metres per second, V_{s1} being expressed in kilometres per hour,
(4 V_{s1} feet per minute, V_{s1} being expressed in statute miles per hour)

- (a) when all engines are operating within the maximum continuous power limitations;
- (b) when the aeroplane configuration is as specified for the "en route case, all engines operating" in the Aircraft Flight Manual;
- (c) when the aeroplane weight is equal to the take-off weight less the weight of fuel and oil consumed.

NOTE - V_{s1} and V_{s0} are symbols denoting certain stalling speeds or minimum steady flight speeds, defined in the airworthiness standards and specified for each aeroplane in the Aircraft Flight Manual.

- 9.2.2.2 One Engine Inoperative. The rate of climb at a height of 300 metres (1000 feet) above obstacles at all points along the route or planned diversions therefrom, as determined from the Aircraft Flight Manual, should not be less than:

$$KV_{s0}^2 \begin{cases} \text{- metres per second, } V_{s0} \text{ being expressed in kilometres per hour.} \\ \text{- feet per minute, } V_{s0} \text{ being expressed in statute miles per hour.} \end{cases}$$

where K has the values shown in Table A except that the rate of climb need not be greater than 0.0126 V_{s1} metres per second (4 V_{s1} feet per minute):

- (a) when the critical engine is inoperative;
- (b) when the engines remaining operative are operated within maximum continuous power limitations;
- (c) when the aeroplane configuration is as specified in the Aircraft Flight Manual for the "en route case with the critical engine inoperative";
- (d) when the aeroplane weight is equal to the take-off weight less:
 - (i) the weight of fuel and oil consumed; or
 - (ii) the weight of fuel and oil consumed by the engines as in (d) (i), and the fuel jettisoned, if fuel jettisoning is pre-supposed, provided that sufficient fuel is retained to permit the aeroplane to reach a suitable aerodrome.

TABLE A

Maximum Sea Level Take-off Weight-W less than	K (Metric)	K (Foot-Pound)
18,140 kilograms (40,000 pounds)	0.0000391	0.02
18,140 kilograms (40,000 pounds) to	0.0000391	0.02
27,210 kilograms (60,000 pounds)	W-9,070 9,070	W-20,000 20,000
more than 27,210 kilograms (60,000 pounds)	0.0000783	0.04

9.2.3 Landing.

- 9.2.3.1 Elevation. An airport shall not be listed in the flight plan unless its elevation is within the range for which maximum landing weights have been set forth in the Aircraft Flight Manual.

- 9.2.3.2 Weight. The calculated weight for the expected time of landing at the airport of intended landing or any alternate airport shall not exceed the maximum specified in the Aircraft Flight Manual for the elevation of that airport.
- 9.2.3.3 Landing Distance - Regular Airport. The landing distance of the aeroplane at the airport of intended landing, as determined from the Aircraft Flight Manual, shall not exceed 60 per cent of the effective landing length of:
- (a) the most suitable landing surface for a landing in still air, assuming in the computation that the landing is to be made in still air; and
 - (b) any other landing surface which may be required for landing because of expected wind conditions at the time of arrival.
- 9.2.3.4 Landing Distance - Alternate Airports. The landing distance of the aeroplane at any alternate airport, as determined from the Aircraft Flight Manual, shall not exceed 70 per cent of the effective landing length of:
- (a) the most suitable landing surface for a landing in still air, assuming in the computation that the landing is to be made in still air;
 - (b) any other landing surface which may be required for landing because of expected wind conditions at the time of arrival.
- 9.2.3.5 Application.
- 9.2.3.5.1 Where the performance information relating to variation with temperature is available in the Aircraft Flight Manual, operators shall operate the aircraft in accordance with such information. Where such information is not available, operators shall submit a proposed method for approval in order to demonstrate that adequate safety margins are being applied.
- 9.2.3.5.2 In applying 9.2.3.3 and 9.2.3.4, the landing distance determined from the Aircraft Flight Manual shall be that corresponding to:
- (a) the calculated landing weight of the aeroplane
 - (b) the elevation of the airport;
 - (c) except in the case of 9.2.3.3 (a) and 9.2.3.4 (a), not more than 50 per cent of the expected wind component along the landing path and opposite to the direction of landing, and not less than 150 per cent of the expected wind component in the direction of landing.
- 9.2.3.5.3 The effective length of a landing surface shall be the total length of the landing surface suitable for use at the intended time of landing, less that portion, if any, situated beneath an inclined plane surface clearing all obstructions and having the following characteristics:
- (a) it intersects the landing surface, and at a slope of 1 in 20, extends beyond the approach end of the landing surface;
 - (b) it is symmetrical about a vertical plane containing the centre line of the landing surface;
 - (c) it extends 450 metres (1,500 feet) from the intersection with the landing surface;
 - (d) its width is 120 metres (400 feet) at the landing surface, increasing uniformly to a width of 300 metres (1,000 feet).

NOTE - The landing distance of an aeroplane as given in the Aircraft Flight Manual is the horizontal distance from a point over which the aeroplane passes while at a height of 15 metres (50 feet) above the landing surface to the point at which the aeroplane can be brought to a complete stop, or in the case of seaplanes, to a speed of approximately 5 km. p.h. (3 m. p.h.).

- 9.3 Applicable to aeroplanes not corresponding to ICAO Transport Category A excepting such aeroplanes as have been approved for operation in accordance with the provisions of paragraph 9.2.
- 9.3.1 Multi-engined aeroplanes operated at night or under instrument flight rules.
- 9.3.1.1 Take-off.
- 9.3.1.1.1 Take-off Run. The take-off run shall not exceed the length of the take-off surface.
- 9.3.1.1.2 Take-off Distance. The take-off weight shall be such that the take-off distance, all engines operating, does not exceed:
- (a) for aeroplanes with 2 engines 75 per cent of the length of the take-off area; and
 - (b) for aeroplanes with more than 2 engines 85 per cent of the length of the take-off area; except that in exceptional circumstances when there is an area within the boundaries of the airport, beyond the end of the take-off area that has been declared suitable for climb to 10.5 metres (35 feet) the distance required may be increased proportionately.
- 9.3.1.1.3 Take-off Path. The take-off weight shall be such that the aeroplane with all engines operating, after passing the end of the take-off area, or in the case of the exception provided in 9.3.1.1.2, the end of the additional area declared available, can clear all obstacles within 90 metres (300 feet) either side of the intended flight path by 10.5 metres (35 feet) vertically until the clearances for en route flight can be complied with.
- 9.3.1.2 En Route.
- 9.3.1.2.1 All Engines Operating. The take-off weight shall be such that, at all points along the route or planned diversions therefrom the aeroplane will be capable of a rate of climb of not less than 0.5 metres per second (100 feet per minute) at the flight altitudes planned, when all engines are operated at maximum continuous power.
- 9.3.1.2.2 One Engine Inoperative. The take-off weight shall be such that, in the event of any one engine becoming inoperative at any point along the route or planned diversions therefrom:
- (a) when the aeroplane is in the en route configuration,
 - (b) and the engine(s) remaining operative are operated within maximum continuous power limitations, the flight can continue to a suitable airport, and a safe landing can be made at that airport.
- 9.3.1.3 Landing.
- 9.3.1.3.1 Landing Distance. The take-off weight shall be such that, taking into account that fuel and oil consumed, the estimated landing distance will not exceed 70 per cent of the effective length of the landing surface at the airport of intended landing or any alternate.
- 9.3.2 Single engined aeroplanes and multi-engined aeroplanes not operated at night or under instrument flight rules.
- 9.3.2.1 Take-off.
- 9.3.2.1.1 Take-off Run. The take-off run shall not exceed the length of the take-off surface.
- 9.3.2.1.2 Take-off Distance. The take-off weight shall be such that:
- (a) the take-off distance does not exceed 75 per cent of the length of the take-off area except that in exceptional circumstances when there is an area within the boundaries of the airport beyond the end of the take-off area that the airport authority has declared suitable for climb to 10.5 metres (35 feet) the distance required may be increased proportionately; and

(b) the aeroplane will clear all obstacles in the intended flight path by a safe margin.

9.3.2.2 En route.

9.3.2.2.1 The take-off weight shall be such that, at all points along the route or planned diversions therefrom, the aeroplane will be capable of a rate of climb of not less than 0.5 metres per second (100 feet per minute) at the flight altitudes planned, in the en route configuration when all engines are operated at maximum continuous power.

9.3.2.2.2 The take-off weight shall be such that, in the event of an engine becoming inoperative at any point along the route or planned diversions therefrom, it will be possible to effect an emergency landing.

9.3.2.3 Landing.

9.3.2.3.1 Landing Distance. The take-off weight shall be such that, taking into account the fuel and oil to be consumed, the estimated landing distance will not exceed 70 per cent of the effective length of the landing surface at the airport of intended landing or any alternate.

9.3.3 Performance Data to be applied to 9.3.

9.3.3.1 Take-off.

9.3.3.1.1 Take-off Distance. The take-off distance in 9.3.1.1.2 and 9.3.2.1.2 shall be the horizontal distance measured from the point where the aeroplane commences its take-off run to a point below the aeroplane when it has attained a height of 10.5 metres (35 feet) above the level of the take-off area. The speed at the height of 10.5 metres (35 feet) shall not be less than:

1.2 V_{S1} for aeroplanes with one or two engines,

1.15 V_{S1} for the aeroplanes with more than two engines,

where V_{S1} is the stalling speed in the take-off configuration, with power off.

9.3.3.1.2 Application. In applying 9.3.1.1.1., 9.3.1.1.2, and 9.3.2.1, account shall be taken of:

(a) the elevation of the airport;

(b) not more than 50 per cent of the reported wind component opposite to the direction of take-off, and not less than 150 per cent of the reported wind component in the direction of take-off.

9.3.3.2 Landing.

9.3.3.2.1 Landing Distance. The landing distance in 9.3.2.3.1 and 9.3.1.3.1 shall be the horizontal distance measured from a point over which the aeroplane passes at the height of 10.5 metres (35 feet) above the landing surface to the point at which the aeroplane can be brought to a complete stop, or in the case of seaplanes to a speed of approximately 5 km. p. h. (3 m. p. h.). The speed at the height of 15 metres (50 feet) shall not be less than 1.2 V_{S0} where V_{S0} is the stalling speed in the landing configuration, with power off.

9.3.3.2.2 Application. The calculated landing distance which is applied to 9.3.1.3.1 and 9.3.2.3.1 shall be that associated with:

(a) still air conditions and the landing surface most suitable for such conditions; and

(b) the elevation of the airport;

(c) any other landing surface which is suitable for the expected wind conditions and not more than 50 per cent of the reported wind component opposite to the direction of take-off, and not less than 150 per cent of the reported wind component in the direction of take-off.

9.3.3.2.3 The effective length of a landing surface shall be the total length of the landing surface suitable for use at the intended time for landing, less that portion, if any, situated beneath an inclined plane surface clearing all obstructions and having the following characteristics:

- (a) it intersects the landing surface, and, at a slope of 1 in 20, extends beyond the approach end of the landing surface;
- (b) it is symmetrical about a vertical plane containing the centre line of the landing surface;
- (c) it extends 450 metres (1,500 feet) from the intersection with the landing surface;
- (d) its width is 120 metres (400 feet) at the landing surface, increasing uniformly to a width of 300 metres (1,000 feet).

SECTION II

STANDARDS - OPERATION OF AIRCRAFT - NON-SCHEDULED AIR SERVICES

Appropriate material from the following standards shall be implemented by inclusion in the Operations Manual of a licensed operator in form and manner satisfactory to the Minister.

STANDARDS FOR OPERATION OF AIRCRAFT (NON-SCHEDULED)

General

- 2.1 An operator shall ensure that his employees when abroad know that they must comply with the laws, regulations and procedures of the States in which his aircraft are operated.
- 2.2 An operator shall ensure that each of his pilots is familiar with the regulations and procedures pertinent to the performance of his duties prescribed for the areas to be traversed, the airports to be used and the air navigation facilities relating thereto. The operator shall ensure that other members of the flight crew are familiar with such of these regulations and procedures as are pertinent to the performance of their respective duties in the operation of the aircraft.
- 2.3 An operator or his designated representative shall have responsibility for operational control.
- 2.4 If an emergency situation which endangers the safety of the aircraft or persons necessitates the taking of action which involves a violation of local regulations or procedures by any crew member, the pilot-in-command shall notify the Minister without delay. If the incident occurs outside Canada, the pilot-in-command shall submit a report on any such violations to the appropriate authority of such State; in that event, the pilot-in-command shall also submit a report to the Minister. Such reports shall be submitted as soon as possible and normally within ten days.
- 2.5 Explosives and other dangerous articles other than those necessary for the operation of navigation of the aircraft or for the safety of the personnel or passengers on board shall not be carried in an aircraft, refer to Information Circular 0/22/64.
- 2.6 Operators shall ensure that pilots-in-command have available on board the aircraft all the essential information concerning the search and rescue services in the area over which the aircraft will be flown as promulgated by the Royal Canadian Air Force.

NOTE: Information on search and rescue services may be obtained on request from the appropriate Rescue Co-ordination Centre. Refer to Information Circular 0/36/63.

FLIGHT OPERATIONS

- 3.1 Operating Facilities.
 - 3.1.1 An operator shall ensure that a flight will not be commenced unless ground or water facilities, sufficient and operated adequately for the safety of the aircraft and the passengers, are available.
 - 3.1.2 An operator shall ensure that any inadequacy of the facilities as described in 3.1.1 is reported to the authority immediately responsible for them.
- 3.2 Operating Supervision. An operator shall establish and maintain a method of supervision of flight operations. The method shall be approved by the Minister.

- 3.2.1 Operations Manual. An operator shall provide, for the use and guidance of operations personnel, an Operations Manual in accordance with 8.1. The Operations Manual shall be amended or revised as is necessary to ensure that the information contained therein is kept up to date. All such amendments or revisions shall be issued to all personnel that are required to use this manual. The contents of the Operations Manual and any revisions thereof must be approved by the Minister before becoming effective.
- 3.2.2 Instruction - General. An operator shall ensure that all operations personnel are properly instructed regarding their particular duties and responsibilities and the relationship of such duties to the operation as a whole.
- 3.2.3 Flight Check System. An operator shall establish a check system to be used by the flight crew prior to and on take-off, in flight, on landing, and in emergency, to ensure that the operating procedures contained in the Operations Manual and the Aircraft Flight Manual or other documents associated with the certificate of airworthiness are followed exactly.
- 3.2.4 Minima Flight Altitudes. An operator shall specify the method by which he intends to determine minimum safe altitudes for his operations and shall include this method in the Operations Manual. The minima determined shall not be less than any that may be established by the Minister.
- 3.2.4.1 The operator shall establish such minimum altitudes only after careful consideration of the probable effects of the following factors on the safety of the operation in question:
- (a) the accuracy with which the position of the aircraft can be determined;
 - (b) the probable inaccuracies in the indications of the altimeters used;
 - (c) the characteristics of the terrain (e.g. sudden changes in elevations);
 - (d) the probability of encountering unfavourable meteorological conditions (e.g. severe turbulence and descending air currents);
 - (e) possible inaccuracies in aeronautical charts.
- 3.2.5 Fuel and Oil Records. An operator shall maintain fuel and oil records for each flight to be retained for a period of six months.
- 3.2.6 Crew.
- 3.2.6.1 For each flight, the operator shall designate one pilot to act as pilot-in-command.
- 3.2.6.2 An operator shall ensure that piloting technique and the ability to execute emergency procedures is checked in such a way as to demonstrate the competence of his pilots. Such checks shall be performed twice within any period of one year. Any two such checks which are similar and which occur within a period of four consecutive months shall not alone satisfy this requirement.
- 3.2.6.3 An operator shall maintain current records of the flight time of each of his pilots.
- 3.2.6.4 An operator shall establish limitations on the flight time of flight crew members in accordance with Section III Page 38 of these Standards. These limitations shall be such as to ensure that fatigue, either occurring in a flight or successive flights or accumulating over a period of time, does not endanger the safety of a flight.
- 3.2.6.5 An operator shall ensure that all crew members are instructed and periodically examined in the use of the emergency and lifesaving equipment required to be carried and that they are drilled in emergency evacuation of the aircraft used.
- 3.2.7 Passengers. An operator shall ensure that passengers are made familiar with the location and use of:
- (a) safety belts;
 - (b) emergency exits;

- (c) life jackets, if the carriage of life jackets is prescribed, oxygen equipment; and
- (d) other emergency equipment provided for individual use.

3.2.7.1 The operator shall inform the passengers of the location and general manner of use of the principal emergency equipment carried for collective use.

3.2.7.2 In an emergency during flight passengers shall be instructed in such emergency action as may be appropriate to the circumstances.

3.3 Flight Preparation. A flight shall not be commenced until flight preparation forms have been completed certifying that the pilot-in-command is satisfied that:

- (a) the aircraft is airworthy;
- (b) the instruments and equipment prescribed in Chapter 4, for the particular type of operation to be undertaken, are installed and are sufficient for the flight;
- (c) a maintenance release as prescribed in 6.7 has been issued in respect of the aircraft;
- (d) the weight of the aircraft is such that the flight can be conducted safely, taking into account the flight conditions expected;
- (e) the load carried is so distributed and secured that the aircraft is safe for the flight;
- (f) a check has been completed indicating that the operating limitations on the aircraft can be complied with for the flight to be undertaken;
- (g) the standards of 3.3.1 relating to flight planning have been complied with. Completed flight preparation forms shall be kept by an operator for a period of six months.

3.3.1 Flight Planning. An operational flight plan shall be completed for every intended flight, indicating that the flight can be conducted with safety and that the standards of 3.3.2 and 3.3.3 have been complied with. This plan shall be approved and signed by the pilot-in-command and shall be filed with the operator, his agent, or the aerodrome authority or, if none of these procedures are possible, it shall be left on record in a suitable place at the point of departure.

3.3.2 Weather Conditions.

3.3.2.1 A flight to be conducted in accordance with visual flight rules shall not be commenced unless current meteorological reports or a combination of current reports and forecasts indicate that the meteorological conditions along the route or that part of the route to be flown under visual flight rules are, and will continue to be, such as to make it possible for the flight to be conducted in accordance with visual flight rules.

3.3.2.2 A flight to be conducted in accordance with instrument flight rules shall not be commenced unless the available meteorological information indicates that meteorological conditions at, at least one airport specified in the flight plan will, at the expected time of arrival, be at or above the airport meteorological minima listed in the Operations Manual for that airport when used as an alternate.

3.3.2.2.1 In special cases where the airport of intended landing is isolated and there is no available alternate airport, the operator shall comply with the requirements of 3.3.3.1 (c).

3.3.2.3 Unless otherwise provided in the Operations Manual and approved by the Minister, a flight to be conducted in accordance with instrument flight rules shall not be commenced unless the available meteorological information indicates that meteorological conditions at one alternate airport will be at or above the airport meteorological minima listed in the Operations Manual for that airport, at the expected time of arrival.

3.3.2.4 The meteorological minima for an airport, as contained in the Operations Manual shall not be lower than those established by the Minister, except when specifically approved.

3.3.2.5 A flight to be operated in known or expected icing conditions shall not be commenced unless the aircraft is equipped to cope with such conditions.

3.3.3 Fuel and Oil Supply.

3.3.3.1 A flight shall not be commenced unless, considering wind and other meteorological conditions expected during the flight at the altitudes specified in the operational flight plan, at least sufficient fuel and oil are carried:

- (a) under visual flight rules and under instrument flight rules, when an alternate is not required, to fly to the airport of intended landing and thereafter to fly for forty-five minutes at normal cruising speed;
- (b) under instrument flight rules and when an alternate is specified, to fly to the airport of intended landing and thence to an alternate airport or to fly to an alternate airport by any predetermined point and thereafter, in either case, for two hours at normal cruising speed; however, when adequate intermediate aerodromes and meteorological information are available the fuel and oil need only be sufficient to fly to the aerodrome of intended landing and thence to an alternate and thereafter for forty-five minutes at normal cruising speed;

NOTE - The requirements of 3.3.3.1 (b) above should be considered as applicable to cases where flight under actual instrument conditions is necessary and not to cases where an instrument flight plan is filed solely for the protection afforded by Air Traffic Control with regard to traffic separation.

- (c) under instrument flight rules and where the aerodrome of intended landing is isolated and no suitable alternate is available, to fly to the airport of intended landing and thereafter to fly for two hours at normal cruising speed.

NOTE - Section 3.3.3.1 (c) applies to specific meteorological conditions not normally found or applied within Canada, however, certain locations may qualify but application of this standard must be approved on an individual basis.

3.3.3.2 Fuel and oil in excess of any of the minima specified in 3.3.3.1 shall be carried when there are indications that additional fuel and oil will be required because of expected circumstances, such as traffic delays.

NOTE - These fuel and oil requirements are minima for aircraft equipped with reciprocating engines. Fuel and oil reserves for aircraft equipped with turbine type engines will require special consideration on account of the particular operating characteristics of this type of engine.

3.3.4 Oxygen Supply.

NOTE - Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in this text are as follows:

Absolute Pressure	Metres	Feet
700 mbs.	3,000	10,000
620 mbs.	4,000	13,000

3.3.4.1 A flight to be operated at altitudes at which the atmospheric pressure in personnel compartments will be less than 700 mbs. shall not be commenced unless sufficient stored breathing oxygen is carried to supply:

- (a) the crew for any period in excess of 30 minutes that the pressure in compartments occupied by them will be between 700 mbs. and 620 mbs.;
- (b) the crew and passengers for any period that the atmospheric pressure in compartments occupied by them will be less than 620 mbs.

3.4.1. A flight to be operated with pressurized aircraft shall not be commenced unless an immediately available emergency supply of stored breathing oxygen is carried to supply the flight crew members, in the event of loss of pressurization, for any period in excess of 30 minutes that the atmospheric pressure in any compartment occupied by them would be between 700 mbs. and 620 mbs., and for any period that the pressure would be below 620 mbs.

3.4 In Flight Procedures.

3.4.1 Airport Meteorological Minima. A flight shall not be continued towards the airport of intended landing unless the latest available meteorological information indicates that conditions at that airport or at least one alternate airport, will, at the expected times of arrival, be at or above the meteorological minima specified for such airport.

3.4.1.1 Except in case of emergency, an aircraft shall not continue its approach-to-land at any aerodrome beyond a point at which the limits of the meteorological minima specified for that aerodrome would be infringed.

3.4.2 Meteorological Observations. So far as is possible, weather observed en route shall be reported at prescribed times or points as requested by the Department of Transport.

3.4.3 Hazardous Flight Conditions. Hazardous flight conditions encountered en route shall be reported to the appropriate aeronautical station as soon as possible. The reports so rendered shall give such details as may be pertinent to the safety of other aircraft.

3.4.4. Pilots at Controls. Each required flight crew member on flight deck duty shall remain at his station while the aircraft is taking off or landing, and while it is enroute, except when the absence of one member is necessary for the performance of duties in connection with operating the aircraft or when action which will contribute to the safety and efficiency of the flight requires that he be absent from his station. Each flight crew member shall keep his seat belt fastened when at his station.

3.4.5 Use of Oxygen. All flight crew members when engaged in performing duties essential to the operation of an aircraft in flight shall use continuously the breathing oxygen supplied for their use during any period in excess of 30 minutes that the atmospheric pressure in compartments occupied by them is between 700 mbs. and 620 mbs. and at all times when the pressure is less than 620 mbs.

NOTE - Approximate altitudes in the Standard Atmosphere corresponding to the values of absolute pressure used in this text are as follows:

Absolute Pressure	Metres	Feet
700 mbs.	3,000	10,000
620 mbs.	4,000	13,000

3.5 Duties of Pilot-in-Command.

3.5.1 The pilot-in-command shall be responsible for the operation and safety of the aircraft and for the safety of all persons on board, during flight time.

3.5.2 The pilot-in-command shall ensure that the flight check system specified in 3.2.3 is complied with in detail.

3.5.3 The pilot-in-command shall be responsible for reporting all known or suspected defects in the aircraft, to the operator, at the termination of the flight.

3.5.4 The pilot-in-command shall be responsible for the maintenance of the Journey Log Book.

AIRCRAFT INSTRUMENTS AND EQUIPMENT

4.1 In addition to the instruments and equipment prescribed in Airworthiness Standards approved by the Minister, the instruments and equipment prescribed in the following paragraphs shall be installed in aircraft according to the aircraft used and to the circumstances under which the flight is to be conducted.

4.2 All Aircraft on all Flights Shall be Equipped with:

- (a) an accessible and adequate first-aid kit; the first-aid kit shall include: a handbook on first-aid, bandages, antiseptic gauze, adhesive plaster, absorbent cotton, safety pins, tourniquet, and haemostatic bandage, scissors, haemostatic forceps, water-miscible antiseptic, analgesic, stimulant and remedy for burns;
- (b) at least one portable fire extinguisher if the pilot's compartment is remote from the passenger compartment;
- (c) means of ensuring that the following information and instructions are conveyed to the passengers:
 - (i) when seat belts are to be fastened;
 - (ii) when and how oxygen equipment is to be used, if the carriage of oxygen is required;
 - (iii) restrictions on smoking;
 - (iv) location and use of life belts, if carriage of life belts is required;
 - (v) location and method of opening emergency exits;
- (d) spare electrical fuses of each rating used, equal in number to 25 per cent of the number installed, or three of each rating, whichever is the greater;
- (e) the following manuals, charts and information:
 - (i) the Aircraft Flight Manual for the aircraft, or, if such a manual does not exist, other documents containing performance data required for the operation of the aircraft;
 - (ii) information relating to communication facilities, navigation aids, aerodromes, in-flight procedures, and such other information as the operator may deem necessary for the proper conduct of the flight operations over the route to be flown;
 - (iii) current charts to cover the route of the proposed flight and any route along which it is reasonable to expect that the flight may be diverted;
 - (iv) the ground-air signal codes for search and rescue purposes.

4.3 All Aircraft on Flights over Water.

4.3.1 Seaplanes. All seaplanes for all flights shall be equipped with:

- (a) one life belt, or equivalent individual floatation device, for each person on board, stowed in a position easily accessible from his seat and an additional number equal to at least one-fifth of the number of persons on board, stowed in a readily accessible position near the exits;
- (b) equipment for making the sound signals prescribed in the International Regulations for the Prevention of Collisions at Sea, where applicable;
- (c) one sea anchor (drogue).

NOTE - "Seaplanes" includes amphibians operated as seaplanes.

4.3.2 Landplanes. All landplanes when used over routes on which the aircraft may be over water and beyond gliding distance from the shore, except during take-off and initial climb, shall be equipped with: one life belt, or equivalent individual floatation device, for each person on board, stowed in a position easily accessible from his seat, however, the Minister may grant specific exemptions from this requirement in the case of multi-engined aircraft when operated over water but not more than 20 minutes, at cruising speed away from shore. See Air Regulations para 538 and ANO series II No. 8 para 4.

NOTE - "Shore" includes shore bound ice capable of bearing the weight of the aircraft.

NOTE - "Landplanes" includes amphibians operated as landplanes.

4.3.3 All Aircraft on Long Range Flights. In addition to the equipment prescribed in 4.3.1 or 4.3.2, whichever is applicable, all aircraft when used over routes on which the aircraft may be over water shall be equipped in accord with ANO Series II No. 8.

4.4 All Aircraft on Flights Over Undeveloped Areas. All aircraft when operated across areas where search and rescue would be especially difficult shall be equipped with a portable radio transmitter capable of being operated by unskilled personnel, and life saving equipment including means of sustaining life, as are appropriate to the flight to be undertaken. See ANO Series V No. 12.

4.5 All Aircraft on High Altitude Flights.

NOTE - Approximate altitude in the Standard Atmosphere corresponding to the values of absolute pressure used in this text is as follows:

Absolute Pressure	Metres	Feet
700 mbs.	3,000	10,000

4.5.1 An aircraft intended to be operated with atmospheric pressures less than 700 mbs. in personnel compartments shall be equipped with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 3.3.4.1.

4.5.2 An aircraft intended to be operated at altitudes at which the atmospheric pressure is less than 700 mbs., but which is provided with means of maintaining pressures greater than 700 mbs. in personnel compartments shall be provided with oxygen storage and dispensing apparatus capable of storing and dispensing the oxygen supplies required in 3.3.4.2.

4.6 All Aircraft in Icing Conditions. All aircraft shall be equipped with anti-icing facilities when operated in circumstances in which icing conditions are reported to exist or are expected to be encountered.

4.7 All Aircraft Operated in Accordance with Instrument Flight Rules. All aircraft when operated in accordance with instrument flight rules, or when the aircraft cannot be maintained in a desired attitude without reference to one or more flight instruments, shall be equipped with:

- (a) a gyroscopic rate-of-turn indicator combined with an instrument which will indicate acceleration along the transverse axis of the aircraft;
- (b) a gyroscopic bank and pitch indicator;
- (c) a gyroscopic direction indicator;
- (d) means of indicating whether the power supply to the gyroscopic instruments is working satisfactorily;
- (e) two sensitive pressure altimeters;

NOTE - A sensitive altimeter of any type fitted in accordance with airworthiness standards approved by the Minister may be included in the two here prescribed.

- (f) a means of indicating in the flight crew compartment the outside air temperature;
- (g) a time-piece with a sweep-second hand;
- (h) one airspeed indicating system with means of preventing malfunctioning due to either condensation or icing;
- (i) a rate-of-climb and descent indicator.

4.7.1 Those instruments that are used by any one pilot shall be so arranged as to permit the pilot to see them readily from his station, with the minimum practicable deviation from the position and line of vision which he normally assumes when looking forward along the flight path.

4.8 All Aircraft When Operated at Night. All aircraft when operated at night, shall be equipped with:

- (a) all equipment specified in 4.7;
- (b) equipment for displaying the lights prescribed in the Air Regulations;
- (c) two landing lamps;
- (d) illumination for all instruments and equipment that are essential for safe operation of the aircraft and are used by the flight crew;
- (e) lights in all passenger compartments;
- (f) an electric torch for each crew member station.

NOTE - Aircraft not certificated in an ICAO category which are equipped with a single landing lamp having two separately energized filaments will be considered to have complied with 4.8(c). See ANO Series II No. 6.

AIRCRAFT RADIO EQUIPMENT

5.1 An aircraft when operated in accordance with visual flight rules shall be provided with radio equipment capable of conducting two-way communication for airport control purposes.

5.2 An aircraft operated over routes on which navigation is not or cannot be accomplished by visual reference to land marks, or when operated in accordance with instrument flight rules, shall be provided with radio equipment:

- (a) capable of conducting two-way communication from a distance of at least 25 nautical miles with airport control at each regular and alternate airport having airport control and at which it is intended to take-off or land;
- (b) capable of conducting two-way communication at any time during flight with appropriate stations when flying in control zones and control areas and, when outside control zones and control areas, with at least one aeronautical station;
- (c) capable of receiving meteorological information at any time during flight;
- (d) capable of receiving signals from radio aids to navigation:
 - (i) to enable the aircraft to navigate in accordance with its flight plan; and
 - (ii) to enable the aircraft to navigate in accordance with the instructions from Air Traffic Control.

5.3 On flights in which it is intended to land in instrument flight conditions an aircraft shall be provided with radio equipment capable of receiving signals providing guidance to a point from which a visual landing can be effected. This equipment shall be capable of providing such guidance at each airport at which it is intended to land in instrument flight conditions. See ANO Series II No. 7.

5.4 The provision and installation of the radio equipment which is carried in order to comply with 5.2(a) or 5.2(c) or 5.2(d) or 5.3 shall be so arranged that the failure of a component will not preclude receiving the communications and signals specified therein.

- 5.5 The provision and installation of the radio equipment which is carried in order to comply with 5.2(b) whenever the aircraft is operated over routes along which airports with usable landing aids do not exist in sufficient numbers to permit diversion from any point on the route, shall be so arranged that the failure of a component will not preclude receiving the communications specified therein.

NOTE - The provisions of 5.4 and 5.5 should not be interpreted as requiring duplication of equipment for each function, but rather the ability to perform the functions required by alternative means already provided in the aircraft for other purposes.

- 5.6 The requirements of 5.1, 5.2, 5.4 and 5.5 are considered fulfilled if the ability to conduct the communications specified therein is established during radio operating conditions which are normal for the route.
- 5.7 When the required ground radio facilities are not available and the Minister is satisfied that a flight can be conducted with safety without affecting the communications specified herein, exemptions from these requirements may be granted.
- 5.8 Notwithstanding anything contained in this Chapter an aircraft owner shall not be relieved of the responsibility of seeing that all radio equipment installed in an aircraft registered in Canada is approved by the Director of Telecommunications of the Department of Transport and licensed in accordance with the Radio Act, 1938.

AIRCRAFT MAINTENANCE

- 6.1 Organization. An operator shall ensure that there is provided an organization including trained staff, workshops and other equipment and facilities to maintain his aircraft in an airworthy condition when in use.
- 6.2 Inspection. An operator shall ensure that there is provided a system of inspection to ensure that all maintenance, overhaul, alterations and repairs which affect airworthiness, are effected as prescribed in the Maintenance Manual.
- 6.3 Maintenance Manual.
- 6.3.1 An operator shall ensure that there is provided, for the use and guidance of maintenance organizations and personnel, a Maintenance Manual containing the information specified in 8.2.
- 6.3.2 An operator shall ensure that the Maintenance Manual is amended or revised as is necessary to keep the information contained therein up-to-date.
- 6.3.3 Copies of all revisions and amendments to a Maintenance Manual shall be furnished promptly to all organizations or persons to whom the manual has been issued.
- 6.4 Training. An operator shall ensure that all maintenance personnel are instructed regarding the maintenance methods to be employed, in particular when new or unfamiliar equipment is introduced into service.
- 6.5 Licensing. Each person charged with the responsibility of certifying as to the airworthiness of an aircraft shall hold an appropriate and valid licence.
- 6.6 Alterations and Repairs. All alterations and repairs shall be effected in accordance with methods appropriate to the aircraft concerned.
- 6.7 Maintenance Release. A Maintenance Release shall be completed and signed by a person or persons qualified to certify that the maintenance work has been completed satisfactorily and in accordance with the methods prescribed in the Maintenance Manual.
- 6.8 Records. An operator shall ensure that the following records are kept in respect of the major components of his aircraft and those instruments and equipment, the serviceability and operating life of which are determined by time in service:

- (a) the total time in service;
- (b) the date of the last overhaul;
- (c) the date of the last inspection.

These records shall be kept for a period of ninety days after the end of the operating life of the unit to which they refer.

- 6.9 Application. For the purpose of this chapter, "aircraft" shall include: power plants, propellers, components, accessories, instruments, equipment and apparatus including emergency equipment.

AIRCRAFT FLIGHT CREW

7.1 Qualifications.

- 7.1.1 A pilot shall not act as pilot-in-command of an aircraft in a non-scheduled operation unless:

- (a) he has demonstrated or proved to the satisfaction of the operator, within the preceding twelve months, knowledge of the terrain, the seasonal meteorological conditions, the communication and navigation facilities, and procedure, and the location of search and rescue facilities which are associated with the route along which the flight is to take place;
- (b) he has performed within the preceding six months, in flight, an established instrument approach procedure for each type of instrument approach system that he may utilize in the operation;
- (c) he has made, within the preceding ninety days, at least three take-offs and landings in aircraft of the same make and model with not less than either one half of the maximum load or ninety per cent of the maximum landing weight;
- (d) prior to engaging in night operations he shall have made at night at least one of the take-offs and landings required in (c) above.

7.2 Composition of the Flight Crew.

- 7.2.1 The flight crew shall not be less than that specified in the Operations Manual. The flight crew shall include flight crew members in addition to the minimum numbers specified in the certificate of airworthiness of the aircraft or the Aircraft Flight Manual or other documents associated with the certificate of airworthiness, when necessitated by considerations related to the type of aircraft used, the type of operation involved and the duration of flight between points where flight crews are changed.
- 7.2.2 Radio Operator. The flight crew shall include at least one member who holds a valid licence, issued by the Minister or issued or rendered valid by the State of Registry, authorizing him to operate the type of radio transmitting equipment to be used.
- 7.2.3 Flight Engineer. When a separate flight engineer's station is incorporated in the design of an aircraft, the flight crew shall include at least one flight engineer especially assigned to that station, unless the duties associated with that station can be satisfactorily performed by another flight crew member without interference with his regular duties.
- 7.2.4 Flight Navigator. The flight crew shall include at least one member who holds a flight navigator licence in all operations where navigation cannot be accomplished by the use of visual or non-visual ground aids.

MANUALS, LOGS AND RECORDS

- 8.1 Operations Manual. An Operations Manual provided in accordance with 3.2.1 shall contain at least the following:

- (a) instructions outlining the responsibilities of operations personnel pertaining to the conduct of flight operations;

- (b) the flight crew required for each type of operation to be conducted including the designation of the succession of command;
- (c) emergency flight procedures;
- (d) the method of determining minimum safe flight altitudes;
- (e) the method of determining meteorological minima;
- (f) the circumstances in which a radio listening watch is to be maintained;
- (g) a list of the navigational equipment to be carried;
- (h) specific instructions for the computation of the quantities of fuel and oil to be carried having regard to all circumstances of the operation including the possibility of the failure of one or more power plants while en route;
- (i) instructions regarding the procurement of detailed information in respect to communications facilities, navigation aids, aerodromes, in-flight procedures, and such other information as the operator may deem necessary;
- (j) the conditions under which oxygen shall be used.

8.2 Maintenance Manual. A Maintenance Manual provided in accordance with 6.3 shall contain the following information in respect of the aircraft used;

- (a) procedures for servicing and maintenance;
- (b) the frequency of each check, overhaul or inspection;
- (c) the responsibilities of the various classes of skilled maintenance personnel;
- (d) the servicing and maintenance methods which may be prescribed by, or which require the prior approval of, the Minister;
- (e) the procedure for preparing the Maintenance Release, the circumstances under which this release is to be issued and the personnel required to sign it.

8.3 Maintenance Release. A Maintenance Release shall contain a certification as to the satisfactory completion of maintenance work carried out in accordance with the methods prescribed in the Maintenance Manual.

8.4 Records of Emergency and Survival Equipment Carried. Operators shall at all times have available for immediate communication to rescue co-ordination centres, lists containing information on the emergency and survival equipment carried on board any of their aircraft. The information shall include, as applicable, the number, colour and type of life rafts and pyrotechnics, details of emergency medical supplies, water supplies and the type and frequencies of the emergency portable radio equipment.

AIRCRAFT OPERATING LIMITATIONS

9.1 General.

9.1.1 An aircraft shall be operated in compliance with the terms of its certificate of airworthiness and within the approved operating limitations contained in its Aircraft Flight Manual or other documents associated with the certificate of airworthiness.

9.1.2 When foreseeable hazards not specifically covered by the provisions of this Chapter exist, the operator shall take such practicable precautions as are necessary to ensure that the general level of safety, contemplated by these provisions, is maintained.

- 9.1.3 A flight shall not be commenced unless performance information provided in the Aircraft Flight Manual, or in the case of 9.3, such other performance information as the Minister may deem appropriate, indicates that the relevant Standards of 9.2 or 9.3 can be complied with for the flights to be undertaken.
- 9.2 Applicable to Aeroplanes corresponding to ICAO Transport Category A and such other aeroplanes as have been approved for operation in accordance with the provision of this paragraph.
- 9.2.1 Take-off.
- 9.2.1.1 Elevation. The elevation of the airport shall be within the range for which maximum take-off weights have been set forth in the Aircraft Flight Manual.
- NOTE - The performance data in the Aircraft Flight Manual will normally be given in terms of "altitude" (i.e., altitude in the Standard Atmosphere, or pressure altitude). In compliance with 9.2.1.1, 9.2.1.2 and 9.2.1.6.2b, the value of "altitude" to be assumed in using the take-off performance data is to be the elevation of the airport.
- 9.2.1.2 Weight. Take-off weight shall not exceed the maximum take-off weight specified in the Aircraft Flight Manual for the elevation at which the take-off is to be made.
- 9.2.1.3 Accelerate-stop Distance. The accelerate-stop distance determined from the Aircraft Flight Manual shall not exceed a length within the take-off area along which the ground or water is suitable to be used for accelerate-stop purposes by the aeroplane involved.
- 9.2.1.4 Take-off Distance. The distance required to attain a height of 10.5 metres (35 feet) above the take-off area, with the critical engine becoming inoperative at the critical point, as determined from the Aircraft Flight Manual, shall not exceed the length of the take-off area, except that in exceptional circumstances when there is an area within the boundaries of the airport beyond the end of the take-off area that has been declared suitable for climb to 10.5 metres (35 feet), the distance required may be increased accordingly.
- 9.2.1.5 Take-off Path. The take-off path with the critical engine becoming inoperative at the critical point, as determined from the Aircraft Flight Manual shall indicate that the aeroplane,
- (a) when reaching the end of the take-off area, or, in the case of the exception provided in 9.2.1.4, the end of the additional area declared available, can clear all obstacles within 60 metres (200 feet) on either side of the flight path by 10.5 metres (35 feet) vertically, and
 - (b) after passing the end of the take-off area or the end of any additional area declared available in accordance with 9.2.1.4, can clear by not less than a vertical margin of 10.5 metres (35 feet) which increases uniformly, all obstacles lying within a distance uniformly increasing from 60 metres (200 feet) on either side of the flight path, until the prescribed clearance for en route flight can be complied with.
- 9.2.1.6 Application.
- 9.2.1.6.1 Where the performance information relating to variation with temperature is available in the Aircraft Flight Manual, operators shall operate the aircraft in accordance with such information. Where such information is not available, operators shall submit a proposed method for approval in order to demonstrate that adequate safety margins are being applied.
- 9.2.1.6.2 In applying 9.2.1.3, 9.2.1.4 and 9.2.1.5 the accelerate-stop distance, the take-off distance and the take-off path as determined from the Aircraft Flight Manual shall be those corresponding to:
- (a) the take-off weight of the aeroplane;
 - (b) the elevation of the airport;
 - (c) not more than 50 per cent of the reported wind component along the take-off path and opposite to the direction of take-off and not less than 150 per cent of the reported wind component in the direction of take-off.

9.2.2 En Route.

- 9.2.2.1 The rate of climb at a height of 300 metres (1,000 feet) above obstacles at all points along the route or planned diversions therefrom, as determined from the Aircraft Flight Manual shall not be less than:

$0.0126V_{s1}$ metres per second, V_{s1} being expressed in kilometres per hour,
 (4_{s1}) feet per minute, V_{s1} being expressed in statute miles per hour)

- (a) when all engines are operating within the maximum continuous power limitations;
- (b) when the aeroplane configuration is as specified for the "en route case, all engines operating" in the Aircraft Flight Manual;
- (c) when the aeroplane weight is equal to the take-off weight less the weight of fuel and oil consumed.

NOTE: V_{s1} and V_{s0} are symbols denoting certain stalling speeds or minimum steady flight speeds, defined in the airworthiness standards and specified for each aeroplane in the Aircraft Flight Manual.

- 9.2.2.2 One Engine Inoperative. The rate of climb at a height of 300 metres (1,000 feet) above obstacles at all points along the route or planned diversions therefrom, as determined from the Aircraft Flight Manual, should not be less than:

KV_{s0}^2 metres per second, V_{s0} being expressed in kilometres per hour.
 { - feet per minute, V_{s0} being expressed in statute miles per hour.

where K has the values shown in Table A except that the rate of climb need not be greater than $0.126V_{s1}$ metres per second ($4V_{s1}$ feet per minute):

- (a) when the critical engine is inoperative;
- (b) when the engines remaining operative are operated within maximum continuous power limitations;
- (c) when the aeroplane configuration is as specified in the Aircraft Flight Manual for the "en route case with the critical engine inoperative";
- (d) when the aeroplane weight is equal to the take-off weight less:
 - (i) the weight of fuel and oil consumed; or
 - (ii) the weight of fuel and oil consumed by the engines as in (d) (i), and the fuel jettisoned, if fuel jettisoning is presupposed, provided that sufficient fuel is retained to permit the aeroplane to reach a suitable aerodrome.

TABLE A

Maximum Sea Level Take-off Weight-W	K (Metric)	K (Foot-pound)
less than 18,140 kilograms (40,000 pounds)	0.0000391	0.02
18,140 kilograms (40,000 pounds) to 27,210 kilograms (60,000 pounds)	0.0000391 W-9,070 <hr/> 9,070	0.02 W-20,000 <hr/> 20,000
more than 27,210 kilograms (60,000 pounds)	0.0000783	0.04

9.2.3 Landing.

9.2.3.1 Elevation. An airport shall not be listed in the flight plan unless its elevation is within the range for which maximum landing weights have been set forth in the Aircraft Flight Manual.

9.2.3.2 Weight. The calculated weight for the expected time of landing at the airport of intended landing or any alternate airport shall not exceed the maximum specified in the Aircraft Flight Manual for the elevation of that airport.

9.2.3.3 Landing Distance - Regular Airports. The landing distance of the aeroplane at the airport of intended landing, as determined from the Aircraft Flight Manual, shall not exceed 60 per cent of the effective landing length of:

- (a) the most suitable landing surface for a landing in still air, assuming in the computation that the landing is to be made in still air; and
- (b) any other landing surface which may be required for landing because of expected wind conditions at the time of arrival.

9.2.3.4 Landing Distance - Alternate Airports. The landing distance of the aeroplane at any alternate airport, as determined from the Aircraft Flight Manual, shall not exceed 70 per cent of the effective landing length of:

- (a) the most suitable landing surface for a landing in still air, assuming in the computation that the landing is to be made in still air;
- (b) any other landing surface which may be required for landing because of expected wind conditions at the time of arrival.

9.2.3.5 Application.

9.2.3.5.1 Where the performance information relating to variation with temperature is available in the Aircraft Flight Manual, operators shall operate the aircraft in accordance with such information. Where such information is not available, operators shall submit a proposed method for approval in order to demonstrate that adequate safety margins are being applied.

9.2.3.5.2 In applying 9.2.3.3 and 9.2.3.4, the landing distance determined from the Aircraft Flight Manual shall be that corresponding to:

- (a) the calculated landing weight of the aeroplane;
- (b) the elevation of the airport;
- (c) except in the case of 9.2.3.3(a) and 9.2.3.4 (a), not more than 50 per cent of the expected wind component along the landing path and opposite to the direction of landing, and not less than 150 per cent of the expected wind component in the direction of landing.

9.2.3.5.3 The effective length of a landing surface shall be the total length of the landing surface suitable for use at the intended time of landing, less that portion, if any, situated beneath an inclined plane surface clearing all obstructions and having the following characteristics:

- (a) it intersects the landing surface, and at a slope of 1 in 20, extends beyond the approach end of the landing surface;
- (b) it is symmetrical about a vertical plane containing the centre line of the landing surface;
- (c) it extends 450 metres (1,500 feet) from the intersection with the landing surface;
- (d) its width is 120 metres (400 feet) at the landing surface, increasing uniformly to a width of 300 metres (1,000 feet).

NOTE - The landing distance of an aeroplane as given in the Aircraft Flight Manual is the horizontal distance from a point over which the aeroplane passes while at a height of 15 metres (50 feet) above the landing surface to the point at which the aeroplane can be brought to a complete stop, or in the case of seaplanes, to a speed of approximately 5 km.p.h. (3 m.p.h.).

- 9.3 Applicable to aeroplanes not corresponding to ICAO Transport Category A excepting such aeroplanes as have been approved for operation in accordance with the provisions of paragraph 9.2.
- 9.3.1 Multi-engined aeroplanes operated at night or under instrument flight rules.
- 9.3.1.1 Take-off.
- 9.3.1.1.1 Take-off Run. The take-off run shall not exceed the length of the take-off surface.
- 9.3.1.1.2 Take-off Distance. The take-off weight shall be such that the take-off distance, all engines operating, does not exceed:
- (a) for aeroplanes with 2 engines 75 per cent of the length of the take-off area; and
 - (b) for aeroplanes with more than 2 engines 85 per cent of the length of the take-off area; except that in exceptional circumstances when there is an area within the boundaries of the airport, beyond the end of the take-off area that has been declared suitable for climb to 10.5 metres (35 feet) the distance required may be increased proportionately.
- 9.3.1.1.3 Take-off Path. The take-off weight shall be such that the aeroplane with all engines operating, after passing the end of the take-off area, or in the case of the exception provided in 9.3.1.1.2, the end of the additional area declared available can clear all obstacles within 90 metres (300 feet) either side of the intended flight path by 10.5 metres (35 feet) vertically until the clearances for en route flight can be complied with.
- 9.3.1.2 En Route.
- 9.3.1.2.1 All Engines Operating. The take-off weight shall be such that, at all times along the route or planned diversions therefrom, the aeroplane will be capable of a rate of climb of not less than 0.5 metre per second (100 feet per minute) at the flight altitudes planned, when all engines are operated at maximum continuous power.
- 9.3.1.2.2 One Engine Inoperative. The take-off weight shall be such that, in the event of any one engine becoming inoperative at any point along the route or planned diversions therefrom,
- (a) when the aeroplane is in the en route configuration,
 - (b) and the engine(s) remaining operative are operated within maximum continuous power limitations, the flight can continue to a suitable airport, and a safe landing can be made at that airport.
- 9.3.1.3 Landing.
- 9.3.1.3.1 Landing Distance. The take-off weight shall be such that, taking into account the fuel and oil consumed, the estimated landing distance will not exceed 70 per cent of the effective length of the landing surface at the airport of intended landing or any alternate.
- 9.3.2 Single engined aeroplanes and multi-engined aeroplanes not operated at night or under instrument flight rules.
- 9.3.2.1 Take-off.
- 9.3.2.1.1 Take-off Run. The take-off run shall not exceed the length of the take-off surface.
- 9.3.2.1.2 Take-off Distance. The take-off weight shall be such that:
- (a) the take-off distance does not exceed 75 per cent of the length of the take-off area except that in exceptional circumstances when there is an area within the boundaries of the airport beyond the end of the take-off area that the airport authority has declared suitable for climb to 10.5 metres (35 feet) the distance required may be increased proportionately; and
 - (b) the aeroplane will clear all obstacles in the intended flight path by a safe margin.

9.3.2.2 En route.

9.3.2.2.1 The take-off weight shall be such that, at all points along the route or planned diversions therefrom, the aeroplane will be capable of a rate of climb of not less than 0.5 metre per second (100 feet per minute) at the flight altitudes planned, in the en route configuration when all engines are operated at maximum continuous power.

9.3.2.2.2 The take-off weight shall be such that, in the event of an engine becoming inoperative at any point along the route or planned diversions therefrom, it will be possible to effect an emergency landing.

9.3.2.3 Landing.

9.3.2.3.1 Landing Distance. The take-off weight shall be such that, taking into account the fuel and oil to be consumed, the estimated landing distance will not exceed 70 per cent of the effective length of the landing surface at the airport of intended landing or any alternate.

9.3.3 Performance Data to be applied to 9.3.

9.3.3.1 Take-off.

9.3.3.1.1 Take-off Distance. The take-off distance in 9.3.1.1.2 and 9.3.2.1.2 shall be the horizontal distance measured from the point where the aeroplane commences its take-off run to a point below the aeroplane when it has attained a height of 10.5 metres (35 feet) above the level of the take-off area. The speed at the height of 10.5 metres (35 feet) shall not be less than:

- 1.2V_{s1} for aeroplanes with one or two engines,
- 1.15V_{s1} for aeroplanes with more than two engines, where
- V_{s1} is the stalling speed in the take-off configuration, with power off.

9.3.3.1.2 Application. In applying 9.3.1.1.1, 9.3.1.1.2 and 9.3.2.1, account shall be taken of:

- (a) the elevation of the airport;
- (b) not more than 50 per cent of the reported wind component opposite to the direction of take-off, and not less than 150 per cent of the reported wind component in the direction of take-off.

9.3.3.2 Landing.

9.3.3.2.1 Landing Distance. The landing distance in 9.3.2.3.1 and 9.3.1.3.1 shall be the horizontal distance measured from a point over which the aeroplane passes at the height of 15 metres (50 feet) above the landing surface to the point at which the aeroplane can be brought to a complete stop, or in the case of seaplanes to a speed of approximately 5 km. p. h. (3 m. p. h.). The speed at the height of 15 metres (50 feet) shall not be less than 1.2V_{s0} where V_{s0} is the stalling speed in the landing configuration with power off.

9.3.3.2.2 Application. The calculated landing distance which is applied to 9.3.1.3.1 and 9.3.2.3.1 shall be that associated with:

- (a) still air conditions and the landing surface most suitable for such conditions; and
- (b) the elevation of the airport;
- (c) any other landing surface which is suitable for the expected wind conditions and not more than 50 per cent of the reported wind component opposite to the direction of take-off, and not less than 150 per cent of the reported wind component in the direction of take-off.

9.3.3.2.3 The effective length of a landing surface shall be the total length of the landing surface suitable for use at the intended time for landing, less that portion, if any, situated beneath an inclined plane surface clearing all obstructions and having the following characteristics:

- (a) it intersects the landing surface, and, at a slope of 1 in 20, extends beyond the approach end of the landing surface;
- (b) it is symmetrical about a vertical plane containing the centre line of the landing surface;

- (c) it extends 450 metres (1,500 feet) from the intersection with the landing surface;
- (d) its width is 120 metres (400 feet) at the landing surface, increasing uniformly to a width of 300 metres (1,000 feet).

SECTION III

MANUALS

In order to prevent any confusion as to nomenclature and application, the manuals used by aircraft operators in Canada are defined as follows:-

AIRCRAFT FLIGHT MANUAL

This manual outlines the parameters and envelope within which each aircraft of a specific type must be flown and prescribes the appropriate normal and emergency procedures. It is the basic performance document approved by the airworthiness authority of the country of manufacture. All amendments must also be approved.

AIRCRAFT OPERATING MANUAL

This manual is for a specific aircraft and is compiled by a Canadian operator. It prescribes in greater detail the procedures and limitations adopted by the operator for his operations. It is the operator's responsibility to ensure that all data adopted and amendments thereto remain within the limitations outlined in the Aircraft Flight Manual and that the use of the Aircraft Operating Manual would ensure operation of the aircraft in accordance with the Aircraft Flight Manual.

When such an Aircraft Operating Manual is carried in the aircraft, it will satisfy any Departmental requirement to carry the Aircraft Flight Manual.

OPERATIONS MANUAL

This manual is compiled by a specific aircraft operator. It is the overall control document for the operations of a particular Commercial Air Service. It is usually divided into chapters concerning: operational directives; crew duties, responsibilities and training; flight despatch; load control procedures; maintenance procedures relating to flight operations; types of flight; radio reporting procedures and communications in general; in-flight information data to be provided including thunderstorm and icing conditions; all emergency and safety procedures; air traffic control and other special and related information.

This document and any amendment thereto must be approved by the Director, Civil Aviation.

FLIGHT AND FLIGHT DUTY TIMES

INTRODUCTION

The following Standards relative to flight time and flight duty time limitations shall apply to all flight crew members employed in commercial air services involving:

- (a) the operation of aircraft having a gross weight for take-off in excess of 12,500 lbs., and
- (b) the operation of any aircraft on services certificated for operation under IFR weather conditions;

NOTE - Notwithstanding (a) and (b) above, the flight time limitations set out herein may be applied to the operations of any air carrier if it is determined that such limitations are necessary to maintain an acceptable level of safety in such operations.

The limitations and definitions set out hereunder have been established for the sole purpose of avoiding fatigue which would endanger air safety.

APPLICATION

The provision of maximum flight and flight duty times and the minimum rest periods hereunder does not relieve a flight crew member from complying with Paragraph 408 of the Air Regulations. It shall be the responsibility of the flight crew member to refrain from any activity which might cause him to be fatigued at the commencement of his duty period.

It shall be the responsibility of the operator to incorporate in an Operations Manual limitations appropriate to his operation which do not exceed the limitations specified herein.

An operator shall, when establishing limitations, take into account the following:-

- (a) type of aircraft, equipment and crew complement;
- (b) frequency of take-offs and landings;
- (c) times of scheduled arrivals and departures;
- (d) route flown;
- (e) rest and flight relief facilities;
- (f) the probability of operational delays.

DEFINITIONS

Flight crew Member	- is as defined in Sub-section 32, Section 101, Part 1 of the Air Regulations.								
Flight Time	- is the total time from the moment an aircraft first moves under its own power for the purpose of taking-off until the moment it comes to rest at the end of the flight. NOTE - Flight time as here defined is synonymous with the term "block to block" time in general usage which is measured from the time the aircraft moves from the loading point until it stops at the unloading point.								
Flight Duty Time	- is the time necessary to prepare for, execute and terminate a flight or series of flights and the administrative functions associated therewith. NOTE - The term "series of flights" is used to indicate flights uninterrupted by a rest period.								
Flight Relief	- are accommodations available to the flight deck which provide privacy, ventilation, and adequate dimensions for prone rest.								
Flight Deck Duty Time	- is any portion of flight time spent at a position for which a flight crew member is required.								
Rest Period	- is a period spent on the ground during which a flight crew member is relieved of all duties associated with his employment.								
Period of Time	- is as follows: <table> <tr> <td>Day</td><td>- 24 consecutive hours</td></tr> <tr> <td>Month</td><td>- Calendar month</td></tr> <tr> <td>Quarter</td><td>- Any designated 3-month calendar period</td></tr> <tr> <td>Year</td><td>- Calendar Year.</td></tr> </table>	Day	- 24 consecutive hours	Month	- Calendar month	Quarter	- Any designated 3-month calendar period	Year	- Calendar Year.
Day	- 24 consecutive hours								
Month	- Calendar month								
Quarter	- Any designated 3-month calendar period								
Year	- Calendar Year.								

FLIGHT TIME LIMITATIONS

The flight time of a flight crew member shall not exceed:

- (a) 120 hours in any month;
- (b) 300 hours in any quarter;
- (c) 1200 hours in any year.

FLIGHT DUTY TIME LIMITATIONS

The flight duty time of a flight crew member shall not be scheduled or planned to exceed 15 hours in any day, except under the following circumstances:-

- (a) the flight crew includes 3 or more pilots, at least 2 of whom are qualified by the operator to act as pilot-in-command; and
- (b) flight relief facilities are available for each flight crew member relieved; and
- (c) no flight crew member is scheduled to exceed 12 consecutive hours flight deck duty time; and
- (d) the flight duty time does not exceed 24 hours.

EXTENSIONS OF LIMITATIONS

The limitations herein may be extended if, in the judgment of the pilot-in-command, it is safe to do so for the following purposes:

- (a) engagement in search and rescue activities;
- (b) provision of relief in cases of distress;
- (c) completion of a flight duty period which operational conditions has extended beyond the limitations.

When the daily flight duty limitation period of 15 hours is exceeded by more than 2 hours, and subject to the exceptions in 5.1 above, or when any other of the limitations are exceeded by any amount, a report in a method acceptable to the Department of Transport shall be made by the pilot-in-command to the operator.

REST PERIODS

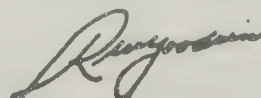
A rest period of sufficient length shall be provided which, taking into account the amount and type of duty preceding and following the rest period, will ensure time for adequate rest prior to undertaking a flight.

A rest period shall in no case be less than 8 consecutive hours, unless in the opinion of the flight crew involved an earlier departure would not jeopardize the safety of the operation.

CARRIAGE OF CARGO IN PASSENGER COMPARTMENTS

When operating conditions require the carriage of cargo which cannot be loaded in approved cargo racks, bins, or compartments which are separated from passenger compartments, such cargo may be carried in a passenger compartment if the following requirements are complied with:

- (a) it shall be packaged or covered in a manner to avoid possible injury to passengers;
- (b) it shall be properly secured in the aircraft by means of cargo nets, strapping or other tie-downs possessing sufficient strength to eliminate possibility of shifting under all normally anticipated flight and ground conditions;
- (c) it shall not impose any loads on seats or on the floor structure which exceed the designed loads for those components;
- (d) it shall not be placed in any position which restricts the access to or use of any required emergency or regular exit or the use of the aisle between the crew and the passenger compartment.
- (e) as an additional safety factor and in accord with good operating practice, whenever practicable cargo shall not be carried aft of or directly above seated passengers.



(R. W. Goodwin),
Director, Civil Aviation.

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26th May

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

TRANS-OCEANIC FLIGHT - SINGLE-ENGINE AIRCRAFT

(Supplementing Information Circular 0/27/64)

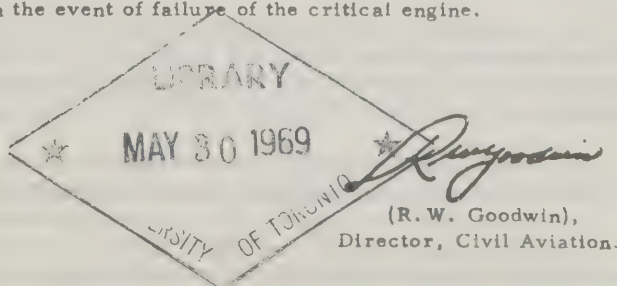
Section 538 of the Air Regulations has been amended and single-engine trans-oceanic flights may now be made with special authorization.

Although the increased performance and reliability of the modern single-engine aircraft combined with improved communication facilities, weather services, etc. has made this change possible, any trans-oceanic flight in a single-engine aircraft demands a relatively high degree of skill and knowledge on the part of the pilot and an aircraft that is airworthy and properly equipped for the flight. Authorization therefore will only be granted if both pilot and aircraft meet an acceptable standard.

To obtain authorization to commence a trans-Atlantic flight from Canada, the pilot-in-command of a single-engine aircraft shall land at Moncton Airport, New Brunswick, where, provided the Regional Controller, Civil Aviation, or his representative is satisfied that the conditions set out in the attached Appendix are met, the necessary authorization will be granted.

At least forty-eight hours prior to landing at Moncton, the pilot-in-command should inform the Regional Controller, Civil Aviation, Federal Building, Moncton, N. B. of his intended trans-oceanic flight stating the date and time of arrival at Moncton, the aircraft type and nationality and registration marking, together with the pilot's name and address and the names and addresses of any passengers.

It should be emphasized that this circular also applies in the case of multi-engine aircraft which cannot maintain flight in the event of failure of the critical engine.



APPENDIX

PILOT QUALIFICATIONS

The pilot-in-command shall:

- (a) hold a valid and subsisting pilot licence and an Instrument Rating permitting him to fly under the instrument flight rules;
- (b) satisfy an examining officer as to his knowledge of the meteorological, communication, air traffic control, and search and rescue facilities and procedures over the route to be flown;
- (c) satisfy an examining officer as to his knowledge of the radio and other navigational aids to be used on the flight and as to his ability to navigate using these aids.

AIRCRAFT AIRWORTHINESS

- (a) there shall be in force in respect of the aircraft, a certificate of airworthiness and all conditions upon which the certificate was issued shall have been met;
- (b) the weight of the aircraft and its load shall not exceed the maximum permissible weight specified in the certificate of airworthiness or Aeroplane Flight Manual except that the weight of the aircraft and its load may exceed the maximum permissible weight specified provided the State of Registry has granted written authorization to this effect and such authorization is available for inspection;
- (c) the load carried in the aircraft shall be properly disposed in accordance with the conditions of the certificate of airworthiness or Aeroplane Flight Manual;
- (d) the equipment and any cargo carried shall be secured to prevent shifting in flight and be so placed as not to block or restrict the exits; and
- (e) any modification to the aircraft to permit the carriage of additional fuel or equipment necessary for the flight shall have been certified by the State of Registry and such certification shall be available for inspection.

LIFE SAVING EQUIPMENT

Aircraft shall carry the following life-saving equipment:

- (a) one readily accessible life-jacket or equivalent individual flotation device for each person on board. Each life-jacket or equivalent flotation device shall be fitted with a means of electric illumination for the purpose of facilitating the location of the wearer;
- (b) a readily accessible portable self-buoyant and water resistant radio transmitter capable of transmitting a continuous wave (CW) signal on 500 Kcs or 121.5 Mcs or 243 Mcs.
- (c) a readily accessible water resistant pyrotechnical signalling device capable of displaying the distress signals described in the Distress, Urgency and Safety Signals Order (Air Navigation Order, Series V, No. 6) or in Annex 2 to the Convention on International Civil Aviation;
- (d) life-rafts, sufficient in number to accommodate all persons on board, stowed so as to facilitate their ready use in an emergency and each fitted with
 - (i) for each person carried, two days' supply of concentrated food or its equivalent, that is of high nutritive value, to be contained in a waterproof package;
 - (ii) one canopy suitable for use as a sail, sunshade or raincatcher;
 - (iii) one repair kit adequate to repair the life raft;

- (iv) one balling bucket;
- (v) one signalling mirror;
- (vi) one police whistle;
- (vii) one knife;
- (viii) one CO₂ bottle for emergency inflation of the life raft;
- (ix) one pump adequate to maintain the life raft in an inflated condition;
- (x) two oars or paddles;
- (xi) one seventy-foot retaining line;
- (xii) a means of desalting sea water in sufficient quantity for each person carried, or two pints of water for each person carried;
- (xiii) one fishing kit;
- (xiv) one book on survival appropriate to the Atlantic area;
- (xv) one water resistant flashlight; and
- (xvi) one sea anchor.

AIRCRAFT INSTRUMENTS AND EQUIPMENT

Aircraft must be equipped with the following instruments and equipment in serviceable condition:

- (a) an airspeed indicator with a means of preventing malfunction due to moisture or ice;
- (b) a sensitive pressure altimeter;
- (c) a direct reading magnetic compass that has been adjusted within the preceding thirty days with the aircraft in the same configuration as for the intended trans-oceanic flight;
- (d) a gyroscopic direction indicator or a gyro-magnetic compass;
- (e) a turn and bank indicator;
- (f) a gyroscopic bank and pitch indicator;
- (g) a rate of climb and descent indicator;
- (h) an outside air temperature gauge;
- (i) unless another timepiece is available, a reliable timepiece with a sweep second hand;
- (j) if there is a probability of encountering icing conditions along the route to be flown - de-icing or anti-icing equipment for the engine, propeller and airframe; and
- (k) if the flight is to be made at night
 - (i) navigation lights;
 - (ii) two landing lights or a single landing light having two separately energized filaments;
 - (iii) illumination for all instruments that are essential for the safe operation of the aircraft, and
 - (iv) an electric flashlight at each flight crew member's station.

AIRCRAFT RADIO COMMUNICATION EQUIPMENT - aircraft shall be equipped with radio apparatus adequate to permit two-way communication with Air Traffic Control and Ocean Station Vessels. This apparatus shall include

- (a) VHF radio equipment capable of transmitting and receiving on 121.5 Mcs (A continuous listening watch must be maintained on 121.5 Mcs throughout the flight)
- (b) H-F radio equipment capable of transmitting and receiving on a minimum of two international air ground general purposes frequencies used in the North Atlantic Region and considered suitable for the flight. (5671.5 and 8888 Kcs are recommended for aircraft registered on the North American continent or for new aircraft being ferried from the North American continent.)

AIRCRAFT NAVIGATION EQUIPMENT - aircraft shall be equipped with navigational equipment adequate to navigate in accordance with the flight plan and any Air Traffic Control clearance. This equipment shall include:

- (a) two L/F-M/F receivers each fitted with a BFO or CW switch. At least one of the receivers shall have a direction finding capability;
- (b) navigation computer;
- (c) current aeronautical maps and charts covering any area over which the aircraft might be flown;
- (d) current information on radio beacons, Consol and any other radio aids to be used. Such information shall include the location of the radio aid, its frequency, call sign and times of operation.

INFORMATION CIRCULAR



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9th August

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DEPARTMENT OF TRANSPORT

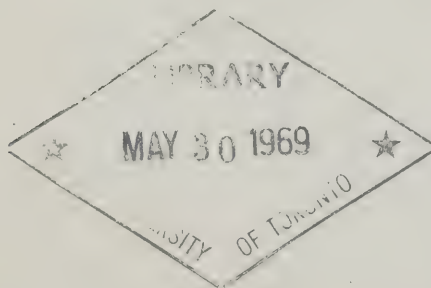
AIR SERVICES
CIVIL AVIATION BRANCH

FINDING THE SUN'S TRUE BEARING (SIMPLIFIED METHOD) (Superseding Information Circular 0/8/65)

In response to a need for the provision of directional information simply and to within one degree (1°) the Flight Standards and Regulations Division of the Civil Aviation Branch has arranged for the development of tables from which the Sun's True Bearing can be quickly extracted knowing only the date, Local Civil Time and approximate latitude and longitude.

The publication entitled "Finding the Sun's True Bearing" is now available through the Queen's Printer, Ottawa, at a price of \$2.00 per copy. Catalogue No. T52-3265 should be quoted.

While the tables were primarily designed to meet the needs of aircraft pilots in the "Area of Compass Unreliability", little imagination is required to recognize their applicability to the simple and quick solution of similar problems facing others who can benefit from knowledge of the Sun's True Bearing. It is therefore significant to note that these tables are not limited to the Canadian "Area of Compass Unreliability" only but have been developed to include any area on the earth's surface, north of 40° North Latitude; and for all practical purposes will maintain usable accuracy for an indefinite period.

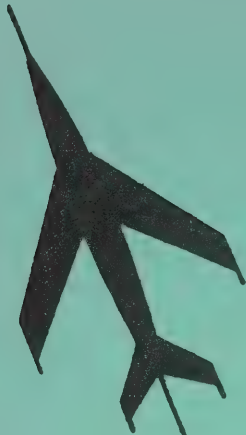


R. W. Goodwin,
Director, Civil Aviation.

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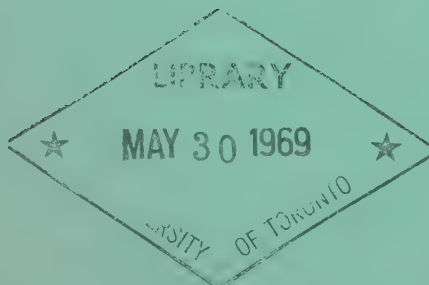


0/14/65



INFORMATION CIRCULAR

AERODROMES



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Aerodromes

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13th September

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DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

AERODROMES

(Superseding Information Circular 0/25/64)

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SECTION I

AERODROMES - LAND, WATER, ICE AND HELIPORTS

DEFINITIONS

AERODROME A defined area on land or water (including any buildings, installations and equipment) intended to be used either wholly or in part for the arrival, departure and movement of aircraft.

AIRPORT Means an aerodrome for which, under Part III of the Air Regulations, an airport licence has been issued by the Minister.

AERODROME BEACON Aeronautical beacon used to indicate the location of an aerodrome.

→ AERODROME ELEVATION The elevation of the highest point of the landing area.

AERODROME REFERENCE POINT The designated geographical location of an aerodrome.

APRON A defined area, on a land aerodrome, intended to accommodate aircraft for purposes of loading or unloading passengers or cargo, refuelling, parking or maintenance.

CLEARWAY A defined rectangular area on the ground (or ice or water) at the end of a runway in the direction of take-off and under control of the appropriate Authority, selected or prepared as a suitable area over which an aircraft may make a portion of its initial climb to a specified height.

→ HAZARD BEACON An aeronautical beacon, red in colour, used to designate a potential danger to air navigation.

INSTRUMENT RUNWAY A runway intended for the operation of aircraft using non-visual aids and comprising:

- (a) Instrument approach runway. An instrument runway served by a non-visual aid providing at least directional guidance adequate for a straight-in approach.
- (b) Precision approach runway. An instrument runway served by ILS or GCA approach aids and intended for use in conditions of poor visibility and/or low cloud base.

LANDING AREA The part of the movement area intended for the landing or take-off run of aircraft.

MAIN RUNWAY The runway determined as such by the appropriate Authority.

MARKERS Objects other than wind socks or cones, wind direction indicators and flags, used to indicate obstructions or to convey aeronautical information by day.

MARKINGS Signs displayed on surfaces in order to convey aeronautical information.

MOVEMENT AREA That part of an aerodrome intended for the surface movement of aircraft.

NON-INSTRUMENT RUNWAY A runway intended for the operation of aircraft using visual approach procedures.

NIGHT Means, in respect of any place in Canada, the period of time in any day when the centre of the sun's disc is more than six degrees below the horizon and in any area of Canada where the sun rises and sets daily, night may be calculated as the period of time commencing not less than one-half hour after sunset and ending not less than one-half hour before sunrise.

OBSTRUCTION LIGHT An aeronautical beacon, red in colour, used to designate or mark structures considered to be potentially hazardous obstructions to aircraft operations.

OPERATOR With reference to an aircraft, means the person in possession of the aircraft, whether as owner, lessee, hirer, or otherwise; and with reference to an airport, means the holder of the airport licence, or the person in charge of such airport, whether as employee, agent or representative of the holder of such licence.

RUNWAY A defined rectangular area, on a land or ice aerodrome prepared for the landing and take-off run of aircraft along its length.

RUNWAY SELECTED BASIC LENGTH The length selected as a basis for the design of a runway and associated physical characteristics of the land aerodrome.

SHOULDER An area adjacent to the edge of a paved surface so prepared as to provide a transition between the pavement and the adjacent surface for aircraft running off the pavement.

STOPWAY A defined rectangular area on the ground at the end of a runway in the direction of take-off designated and prepared as a suitable area in which an aircraft can be stopped in the case of an interrupted take-off.

TAXIWAY HOLDING POSITION A designated position short of which taxiing aircraft may be required to stop.

TAXIWAY A defined path, on a land aerodrome, selected or prepared for the use of taxiing aircraft.

THRESHOLD The beginning of that position of the runway usable for landing.

VISIBILITY Means the distance at which prominent unlighted objects may be identified by day and prominent lighted objects may be identified by night.

PRIVATE BUOY REGULATIONS

→ For the convenience of pilots, aircraft operators and operators of seaplane bases an excerpt from the Private Buoy Regulations is provided below:

REGULATIONS RESPECTING PRIVATE BUOYS

Short Title

These Regulations may be cited as the Private Buoy Regulations.

Interpretation

In these Regulations,

- (a) "buoy" means any type of buoy or float anchored in position either permanently or temporarily and maintained as a signal or aid to navigation;
- (b) "government buoy" means a buoy maintained by Her Majesty in right of Canada or in right of any province or any agent thereof, or by a municipal corporation or by a corporation that is owned or controlled by Her Majesty in right of Canada;
- (c) "Minister" means the Minister of Transport; and
- (d) "private buoy" means a buoy other than a government buoy.

No person shall place or cause to be placed in any water a private buoy where that buoy interferes with or is likely to interfere with the navigation of any vessel or where that buoy is likely to mislead any vessel.

No person shall place or cause to be placed in any water a private buoy unless that buoy is constructed in accordance with the specifications set out in the Schedule.

In addition to the requirements of sections 2 to 5 of the Schedule, private buoys maintained in the Rideau and Trent Canal systems shall exhibit a conspicuous yellow band and where reflecting material is used on the buoy the yellow band shall be of yellow reflecting material.

(1) The Minister may cause any private buoy to be removed from the water but where the owner is known to the Minister he may order the owner to remove that buoy.

(2) Where an order is made under subsection (1), and the buoy referred to in that order is not removed in accordance with that order, the Minister may remove or authorize the removal of that buoy from the water.

(3) Where a buoy is removed pursuant to subsection (2), the owner of the buoy shall pay to the Minister the reasonable expenses incurred by the Minister in removing that buoy.

Notwithstanding anything contained in these Regulations, the Minister may exempt any person from compliance with any of the provisions of these Regulations.

Every person who violates any provision of these Regulations is guilty of an offence and is liable upon summary conviction to a fine not exceeding two hundred dollars.

SCHEDULE

1. In this Schedule,

(a) "port hand buoy" means a buoy that is located on the port side (left hand) of the channel when the vessel is proceeding

- (i) with the flood tide on the sea coast,
- (ii) against the current of a river, or
- (iii) away from the outlet towards the head of a lake;

(b) "starboard hand buoy" means a buoy that is located on the starboard side (right hand) of the channel when the vessel is proceeding

- (i) with the flood tide on the sea coast,
- (ii) against the current of a river, or
- (iii) away from the outlet towards the head of a lake;

(c) "middle ground buoy" means a buoy that is located at

- (i) a marine hazard where there is good water on both sides, or
- (ii) the junction of two channels; and

(d) "fairway buoy" means a buoy marking the fairway.

2. Every port hand buoy shall be kept painted black and

- (a) if it carries a light, the light shall be either white or green;
- (b) if it carries reflecting material, the reflecting material shall be white; and
- (c) if it does not carry a light, it shall have a flat top.

3. A starboard hand buoy shall be kept painted red and

- (a) if it carries a light, the light shall be red;
- (b) if it carries reflecting material, the reflecting material shall be red; and
- (c) if it does not carry a light, it shall have a pointed top.

4. A middle ground buoy shall be kept painted in red and black horizontal bands, the uppermost colour indicating the preferred side for passage and

(a) if it carries a light, the light shall be

- (i) white or green if the starboard side of the buoy is the preferred side for passage, or
- (ii) red if the port side of the buoy is the preferred side for passage;

(b) if it carries reflecting material, the reflecting material shall be

- (i) white if the starboard side of the buoy is the preferred side for passage, or
- (ii) red if the port side of the buoy is the preferred side for passage; and

(c) if it does not carry a light, the top of the buoy shall be

- (i) flat if the starboard side of the buoy is the preferred side for passage, or
- (ii) pointed if the port side of the buoy is the preferred side for passage.

A fairway buoy shall be kept painted in black and white vertical stripes.

Barrels or cans may be used for port hand, starboard hand or middle ground buoys if they are kept coloured and carry reflecting material as required in section 2, 3 or 4 of this Schedule.

Buoys marking racing courses, water skiing areas or seaplane bases shall be coloured international orange and carry reflecting material, coloured orange, and if lighted, the lights shall be quick flashing amber of 60 flashes per minute (.3 sec. light .7 sec. dark).

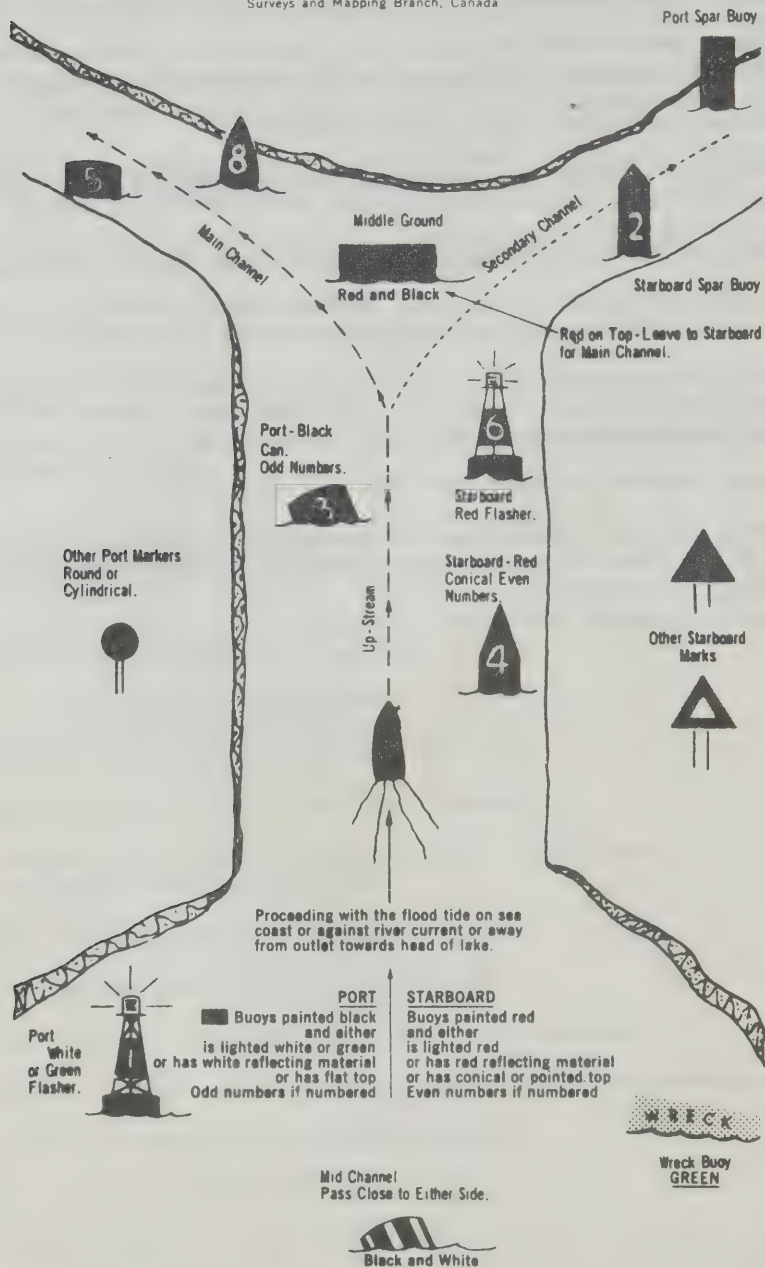
Buoys marking swimming or diving areas shall be coloured white.

Buoys marking areas where skin diving is in progress shall be coloured white and shall carry a red flag not less than 20 inches in either length or breadth with a white diagonal stripe from the top of the hoist to the bottom of the fly.

CANADIAN MARINE BUOYAGE SYSTEM

Note : Buoyage systems in canals are sometimes different. Check with canal authorities.

Dept. of Mines and Technical Surveys
Surveys and Mapping Branch, Canada



PHYSICAL CHARACTERISTICS OF AERODROMES

BASIC REQUIREMENTS The following minimum dimensions are provided as a guide for departmental personnel required to inspect and license landing strips and for those persons planning to develop or improve landing strips with the intention of obtaining a Department of Transport Airport Licence. Specific dimensions must make allowances for a number of factors. The basic length of a runway, for example, should be the length that is required for a level site at sea level, in standard atmospheric conditions and in still air, to meet the needs of the aircraft for which the runway is intended. This basic length should be increased at the rate of 7% per 1,000 feet of elevation above mean sea level. The basic width of the landing strip which includes the portion used for normal landing and taking off, should take into account the alignment of the strip in relation to prevailing winds, the crosswind characteristics of the aircraft for which the landing strip is intended, the nature of the adjacent terrain and the type of flying operations proposed.

LAND AERODROMES AND AIRPORTS

APPROVED AREA FOR TAKE-OFF AND LANDING Where runways are defined their width shall not be less than 75'; the basic strip should extend at least 100 feet to each side of the runway centreline, and 200 feet beyond each threshold. The basic length of a runway shall not normally be less than 1,500 feet however, aircraft performance and certain types of operations may occasionally justify a lesser dimension.

SUPPORTING SURFACE The surface of an all-way turf area or the basic graded area of a runway should be smooth and firm enough to support the weight of the aircraft using the site. The longitudinal gradient should not exceed 2%; lateral gradient should be sufficient to provide adequate drainage and should not exceed 2%. Undulations in the surface should be infrequent and any change in gradient should be very gradual; the rate of change in transition from one gradient to another should not exceed 0.4 feet per hundred feet.

ICE AERODROMES AND AIRPORTS

APPROVED AREA FOR TAKE-OFF AND LANDING The basic length of an area approved for take-off and landing shall not normally be less than one mile in length and 300 feet in width. However, aircraft performance and certain types of operations may occasionally justify less than one mile in length.

→ SUPPORTING SURFACE The thickness and strength of ice in the movement area shall be sufficient to support the weight of the aircraft types being used, as set forth in the * "Recommended Minimum Ice Thickness For Aircraft Operations".

WATER AERODROMES AND AIRPORTS

APPROVED AREA FOR TAKE-OFF AND LANDING The basic length of an area approved for take-off and landing shall not normally be less than one mile in length and 300 feet in width. However, aircraft performance and certain types of operations may occasionally justify less than one mile in length.

SUPPORTING SURFACE The depth of water in the movement area shall not normally be less than 6 feet, and in no case less than 4 feet throughout. The movement area should not be exposed to abnormally irregular or strong currents and should be sheltered from the effects of heavy seas or swells.

VISUAL GROUND AIDS

DAY MARKINGS

RUNWAY MARKERS Except in cases of hard-surfaced runways and taxi areas, the perimeter of serviceable runways (and serviceable movement areas) shall be delineated during all seasons of the year with markers of an approved type discernible on the ground and in the air from an altitude of at least 2000' and a distance of at least one mile.

* See Note, last page.

TYPICAL MARKERS FOR UNPAVED RUNWAYS

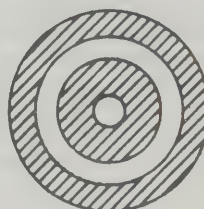
PYRAMIDICAL TYPE



CONICAL TYPE



ELEVATION



PLAN

CHARACTERISTICS

- (A) FRANGIBLE MATERIAL.
- (B) ABILITY TO WITHSTAND WEATHER.
- (C) DISCERNIBLE ON THE GROUND AND IN THE AIR FROM AN ALTITUDE OF AT LEAST 2000' AND A DISTANCE OF AT LEAST ONE MILE.
- (D) PLACED ALONG THE EDGES OF THE FULL LENGTH OF THE RUNWAY IN TWO PARALLEL STRAIGHT LINES EQUIDISTANT FROM THE CENTRE LINE.
- (E) UNIFORMLY SPACED AT INTERVALS OF NOT MORE THAN 300' WITH ONE ADDITIONAL UNIT AT EACH CORNER OF THE RUNWAY AT 90° TO THE CENTRE LINE.

NOTE: Ice Aerodrome and Snow Covered Runways - Experience has proven that spruce trees about 4 to 5 feet high make suitable markers for delineating snow-covered landing strips and runways.

COLOUR LEGEND

INTERNATIONAL ORANGE -	
WHITE-----	

MARKING OF UNSERVICEABLE AREAS

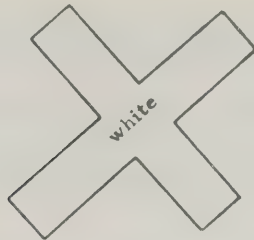
The unserviceable or unsafe portions of the movement areas which are not to be used by any aircraft shall be marked during all seasons of the year as set forth in A.N.O. Series V, No. 7.

When the unserviceable portion of the movement area is sufficiently small for it to be by-passed by aircraft without affecting the safety of their operation, red flags may be used to outline its limits.

In the case of runways and taxiways, an unserviceability marking shall be displayed at each end of any unserviceable part, or the particular area may be closed off completely by suitable marking.

Unserviceable parts of the movement area other than runways and taxiways should be delineated by markings or red flags, and where appropriate, a flag or suitable marker should be placed near the centre of the unserviceable area.

An unserviceability marking shall consist of a cross of the form and dimensions shown in the sketch below, and shall be of a single conspicuous colour, preferably white.



DIMENSIONS

Each arm of cross
not less than 3' x 20'

WIND DIRECTION INDICATORS All airports shall be equipped with an approved type of windsock, which shall show alternate International orange and white segments; windsocks entirely International orange in colour are to be reserved for use on unlicensed aerodromes only.

→ DAY AND NIGHT MARKING OF OBSTRUCTIONS Any significant obstruction on the airport or vicinity shall be painted and/or lighted as set forth in the *"Recommended Standards for Marking Obstructions".

NIGHT MARKINGS

→ AIRPORT LIGHTING Airports licensed for night flying shall be equipped with runway lights, threshold lights, taxiway lights, unserviceable area lights, aerodrome beacon and lighted windsock etc., as set forth in the *"Recommended Minimum Requirements for Airport Lighting", and with either auxiliary power or flare pots readily available in the event of power failure.

UNSERVICEABLE AREA LIGHTING

→ Unserviceable areas within the manoeuvring area of an aerodrome being used at night shall be marked by steady burning red lights outlining the perimeter of the unserviceable area(s). Where it is considered necessary in the interest of safety, one or more flashing red lights may be used in addition to the steady red lights.

An unserviceable portion of a runway or taxiway may be closed off or isolated from the remainder of the manoeuvring area by placing red lights at right angles to the centre-line on both sides of the unserviceable area(s), and by extinguishing the runway and/or taxiway lights between the red lights. The runway and/or taxiway lights shall not be operated when any portion of the area they enclose is unserviceable unless this area is marked with red lights, and the location is such that it presents no hazard to manoeuvring aircraft.

Red lights marking unserviceable areas should be clearly visible to a pilot while taxiing or approaching to land, as applicable.

* See Note, last page.

USE OF AIRPORT LIGHTING EQUIPMENT

AIRPORT LIGHTS shall be operated as indicated in the following paragraphs and at any other time when their use, based on weather conditions, is considered desirable for the safety of air traffic.

AIRPORT BEACON shall be operated continuously during NIGHT, and during DAY when the horizontal visibility is less than 3 miles.

OBSTRUCTION LIGHTS AND WIND DIRECTION INDICATOR LIGHTS shall be lighted continuously during NIGHT, and during DAY when the horizontal visibility is less than 3 miles.

TAXIWAY LIGHTS shall be operated in such order so that a continuous indication of the taxi path(s) is presented to taxiing aircraft. When required, runway lights may be used as taxiway lights where a portion of a runway is used as a taxiway.

APPROACH LIGHTS shall be operated at any time if requested by the pilot or if required to facilitate or safeguard air traffic. At night the approach lights shall be operated at least five (5) minutes in advance of the expected arrival of a flight and shall remain lighted throughout the approach manoeuvre until the aircraft has landed or has requested that they be turned off.

RUNWAY IDENTIFICATION LIGHTS (CONDENSER DISCHARGE) shall be operated to accommodate incoming flights as follows:

By Day - when the visibility is six (6) miles or less, they should be turned on and shall remain on unless the pilot requests that they be turned off.

By Night - these lights shall be operated in conjunction with the approach and runway lights, but may be turned off at pilot's request.

VISUAL APPROACH SLOPE INDICATOR SYSTEMS shall be operated when the runways they serve are in use either by day or night. Unless otherwise requested by a pilot, these lights shall normally be operated at the following intensities:

By Day - Strength 5

By Night - Strength 3

RUNWAY LIGHTS shall be operated at any time if requested by the pilot or if required to facilitate or safeguard air traffic. At night, runway lights shall be operated as follows:

Arrivals - The appropriate runway to be used by an approaching aircraft shall be lighted at least five (5) minutes in advance of the expected arrival time and shall remain lighted until the aircraft has landed and is clear of the runway.

Departures -

Controlled Airports - The appropriate runway shall be lighted before the aircraft enters the runway and shall remain lighted during the take-off manoeuvre and until the aircraft has been cleared from the Control Tower radio frequency.

Uncontrolled Airports - The appropriate runway shall be lighted before the aircraft enters the runway and shall remain lighted during the take-off manoeuvre and for an additional ten (10) minute period thereafter; if no communications are available, the runway should remain lighted for a suitably longer period.

HIGH INTENSITY APPROACH AND/OR RUNWAY LIGHTS shall be operated during the periods indicated in the preceding paragraphs and shall be adjusted in accordance with the table below for the weather conditions prevailing at the time unless otherwise requested by the pilot:

<u>STRENGTH</u>	<u>BRIGHTNESS PERCENT</u>	<u>DAY</u>	<u>VISIBILITY CONDITION NIGHT</u>
1	.02	-	2 miles or better
2	1.0	-	1 mile to 2 miles
3	5.1	2 miles or more	1/4 mile to 1 mile
4	25.0	1 mile to 2 miles on pilot's request	
5	100.0	1/4 mile to 1 mile on pilot's request	

Normally, the same strength setting for high intensity runway and approach lights will be used. In no case shall the strength setting for runway lights be less than for the approach lights serving the runway in use. Only one set of high intensity approach lights shall be lighted at one time.

RUNWAY NUMBERING

In order that the identification and marking of runways and landing strips may be uniform on all airports and aerodromes throughout Canada, a system of numbering the ends of runways by utilizing the reciprocal of their magnetic bearings is used.

To illustrate:-

A runway located east and west (Magnetic): the east end would be numbered "27" representing the magnetic bearing "270°" which a pilot would follow in approaching this runway from east to west. Conversely, the west end would be numbered "09" representing "90°". A runway located north and south (Magnetic) would be numbered "18" at the north end and "36" at the south end. The last digit is dropped so that the number consists of two digits.

→ The number nearest the even 10° division is used, as for example a runway bearing "134°" (Magnetic) will be numbered "13" at the north-westerly end, and "31" at the south-easterly end. Should the bearing be 137° (Magnetic), it will be numbered "14" at the north-westerly end, and "32" at the south-easterly end.

In marking dual parallel runways, the letter "R" below the number will indicate the runway on the right side from the direction of approach. The letter "L" will be used also in case of triple parallel runways.

VISUAL APPROACH SLOPE INDICATOR SYSTEM

To enable pilots to maintain a satisfactory angle of approach during final descent to the runway at airports where it has been determined that difficulty may be experienced in judging the approach due to inadequate visual guidance, a 2-colour visual aid known as the Visual Approach Slope Indicator System (VASIS) is being installed.

→ At the present time one VASIS is installed to serve Runway 06R at Montreal International Airport and it is planned to install additional units at the following locations during 1965-66:

<u>AIRPORT</u>	<u>RUNWAY</u>	<u>AIRPORT</u>	<u>RUNWAY</u>
Edmonton International	29	Sept Iles	06
Halifax International	33	Sydney	01
Lakehead	25	Toronto Island	26 & 08
Ottawa International	14 & 25	Winnipeg International	31 & 13
Sandspit	30		

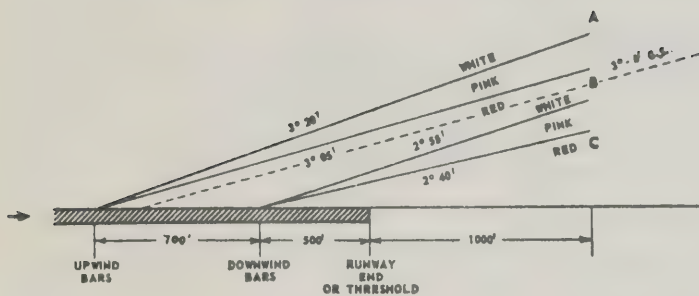
DESCRIPTION

→ The Visual Approach Slope Indicator System consists of 12 light units sited so as to appear to the pilot of an approaching aircraft to be symmetrically disposed about the runway centreline in the form of 2 pairs of runway wing bars, referred to as the upwind and downwind bars, respectively, with each wing bar being composed of 3 light units. The lights forming the downwind bars are located 500' inwards from the landing threshold while those forming the upwind bars are 700' further upwind. The innermost units are located 50' out from the runway edges. Each light unit projects a beam of light having a white colour in its upper part and a red colour in its lower part. The light units are arranged in such a manner that the pilot of an aircraft during an approach will:

- (a) When below the approach slope see all the wing bar lights as having a red colour, and
- (b) When on the approach slope, see the downwind wing bar lights white and the upwind wing bar lights red, and
- (c) When above the approach slope, see all the wing bar lights to be white in colour.

The lights are normally arranged so as to encompass an approach slope angle of $2\frac{1}{2}^\circ$ to the runway threshold and a touchdown zone compatible with that provided by ILS or GCA on precision approach runways. The lights are of variable intensities for day and night use as well as for varying conditions of visibility.

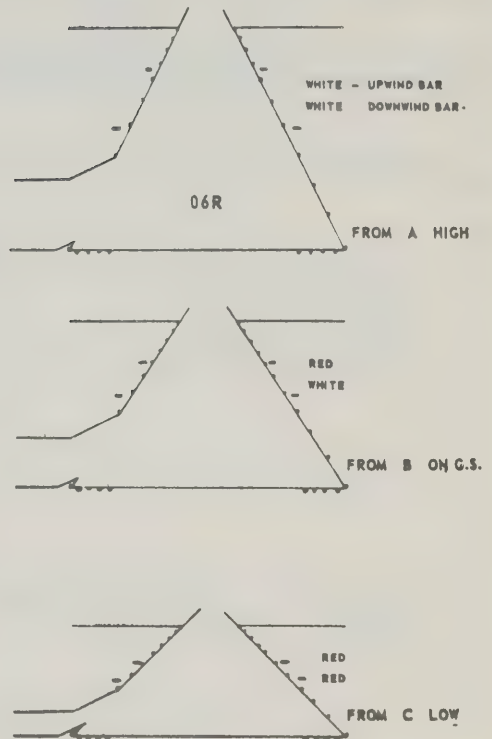
SKETCH OF VGSI RUNWAY 06R
MONTREAL INTERNATIONAL AIRPORT (DORVAL)



When on 3° G.S. Visual Signal received at
eye height over threshold is between 23' and 73'

Visual Signal received at 1000' from threshold
elev. at A 131' Bars White/White
elev. at B 100' U.W. Bar Red/D.W. Bar White
elev. at C 70' Bars Red/Red

VIEW FROM COCKPIT



HELIPORTS

→ Operators who may be planning the development of a heliport and who may require detailed information on the subject are advised that the Department has published a booklet entitled "Heliport Design Criteria" which provides detailed guidance material and general specifications for heliports. The booklet is available upon request.

* See Note, last page.

SECTION II

CONDITIONS FOR THE USE OF CERTAIN CIVIL AND MILITARY AERODROMES

USE OF AERODROMES BY AIRCRAFT ENGAGED IN FLYING INTERNATIONAL ROUTES

→ The following aerodromes are designated for use by aircraft flying on international (other than trans-border) air carrier operations.

The privileges mentioned in this Circular are extended subject to each flight having been properly authorized and to whatever restrictions the Government of Canada may from time to time, or in specific cases, deem to be warranted.

Canadian aerodromes which may be used, and the basis on which they may be used, are as follows:

REGULAR

Edmonton International
Gander International
Halifax International
Montreal International

Toronto International
Vancouver International
Winnipeg International

REFUELLING ONLY

Frobisher

ALTERNATE

Abbotsford (2) Ernest Harmon
Calgary (1) Goose
Comox London

North Bay
Ottawa Int'l
Quebec
Sydney
Whitehorse
Windsor

- (1) Notwithstanding the designation of Goose as an alternate, aircraft may flight-plan to Goose, both east and west-bound, when the regular airport at Gander and the refuelling stop at Frobisher are unusable for reasons of weather conditions or runway/approach aid unserviceabilities. Permission to use Goose under these circumstances is granted as a concession only, and its unauthorized use may result in the privilege being cancelled.
- (2) In view of the increasing number of requests to use Ernest Harmon AFB, the United States Air Force have requested that civil operators in Canada be notified as to the conditions under which approval to use this base may be granted. Briefly, these are as follows:

Commercial Traffic

Ernest Harmon AFB may be used as an alternate to Gander by aircraft engaged in flying international routes and by civil aircraft of Canadian nationality engaged in domestic air services within Canada, provided the operators concerned meet requirements specified in United States Air Force Regulation AFR 55-20.

Itinerant Traffic

Itinerant aircraft operators must obtain prior approval in writing from the Base Commander before proceeding to Ernest Harmon AFB. Certain requirements as specified in United States Air Force Regulation AFR 55-20 must also be met before approval can be expected. Copies of this Regulation and Air Force Forms 180, 181, 203 (Insurance Coverage) which must accompany each request, may be obtained from any United States Air Force Base, or from the office of the Air Attache, United States Embassy, Ottawa, Ontario.

Emergency Landings

Aircraft involved in an in-flight emergency endangering the safety of passengers or aircraft, may land without advance authorization but the pilot must file a complete narrative report with the Base Commander after landing.

The permission to use the above aerodromes in international air carrier operations does not convey traffic rights at these aerodromes to any carrier unless such rights have been authorized by the Air Transport Board.

USE OF DEPARTMENT OF NATIONAL DEFENCE
AERODROMES BY CIVIL AIRCRAFT

The Department of National Defence recognizes the need to assist the operators of civil aircraft. However, the increasing number of requests by civil aircraft operators for the use of DND aerodromes has made it necessary to issue a revised policy.

All applications will be viewed in the light of air traffic, service required, military security, and competition with civil facilities. The following is a guide in making requests:

NOTE: For the purpose of this Circular, commercial aircraft are defined as those civil aircraft, not operated by or on behalf of a government agency, which are engaged in the carriage of personnel or cargo for profit.

- (a) Northern Aerodromes - Application for the use of Distant Early Warning (D. E. W.) Line Aerodromes is to be made to Chief of the Defence Staff, Canadian Forces Headquarters, Ottawa 4, Ontario.

Despite previous publication of advice concerning the procedure to be followed for flights destined to D. E. W. Stations aircraft continue to arrive at these sites without prior notification or permission. Disregard of the established procedures could seriously affect the operation and consequently the efficiency of the D. E. W. System.

Effective immediately, with the exception of operators employed on the D. E. W. resupply airlift, prior clearance from the Department of National Defence is required for all flights to D. E. W. sites. Requests for permission to land at these sites must be made to the Chief of the Defence Staff, Canadian Forces Headquarters, Ottawa 4, Ontario, at least 15 days prior to the date of the proposed operation.

Requests for clearance must include the following information:

proposed itinerary with associated dates;
type of aircraft;
number of personnel involved;
purpose.

Adherence to the procedure outlined herein will not relieve operators of aircraft from compliance with Air Navigation Order, Series V, No. 14, "Security Control of Air Traffic" which Order includes the requirements for the penetration of the Distant Early Warning Identification Zone.

The Department of National Defence has again emphasized that supplies and/or services of any kind at D. E. W. Stations cannot be expected as the operators of these strips are not responsible for the provision of accommodation, fuel or servicing facilities of any kind. Such requirements cannot therefore be provided to itinerant aircraft except in an emergency.

- (b) Non-Restricted Aerodrome - No prior authorization is required to use the Val d'Or, Que aerodrome.

Civil aircraft operators should note that permission to use the above aerodrome under the condition specified is granted as a concession only and the privilege could be cancelled if civil operations adversely affect the military operation.

- (c) Closed Aerodrome - The DND aerodrome at Suffield, Alberta is closed to all civil aircraft.

- (d) Special Aerodromes - Application to use the following aerodromes is to be made to the Air Officer Commanding, Air Defence Command, RCAF Station St. Hubert, Que:
 - (i) Pagwa, Ontario
 - (ii) Puntzi Mountain, B. C.
- (e) All Other DND Aerodromes
 - (i) Commercial Traffic
 - (A) Continuous - No further expansion of commercial use of Department of National Defence airfields can be permitted where evidence indicates that the intended use will be of a continuing nature unless the commercial operators are prepared to provide their own supporting facilities, and the Department of National Defence agrees that the provision of these facilities would not adversely affect the military function. Such facilities would have to be located at a site remote from the Department of National Defence building complex, accessible by a separate road, security fenced and completely self-contained for the provision of all necessary services except weather information and air traffic control. Any such application is to be made to the Department of National Defence through the Director, Civil Aviation Branch, Department of Transport, Ottawa.
 - (B) Itinerant - Permission is to be requested from the Department of National Defence through the Director, Civil Aviation Branch, Department of Transport, Ottawa.
 - (ii) Non-Commercial Traffic - Application is to be made directly to the Commanding Officer of the Canadian Military station involved.

Special Procedures

The following special procedures apply to all civil aircraft wishing to use a DND airport:

- (a) Except in conditions of emergency or unless otherwise specified in this Circular or where a formal agreement exists, all civil aircraft must have obtained prior permission from the responsible Department of National Defence Agency before landing at a military aerodrome.
- (b) All applications must include purpose and nature of the flight, identification and type of aircraft, date and duration of proposed use and extent of services/facilities required. Fuel, accommodation or service will not be supplied where civil facilities are available.
- (c) Functioning two-way radio capable of communicating with the military tower is required by all civil aircraft operating into military aerodromes. Authority to waive this requirement may be obtained from the approving authority of the flight.
- (d) Civil helicopters are not to land in the domestic area of any site or station without the express permission of the Commanding Officer.
- (e) Excluding aircraft operated by the Government of Canada and certain other exemptions, standard fees for landing, hangarage, servicing, etc. will be levied against civil aircraft using military aerodromes. A schedule of such charges may be obtained from any military unit or directly from the Department of National Defence, Ottawa.

HELICOPTER LANDING FIELDS

Pilots are advised that the Hydro Electric Power Commission of Ontario has installed wind socks at helicopter landing fields immediately adjacent or near to high tension transmission lines in the Province of Ontario.

These wind socks may be identified by a large International orange cross placed on the top of the pole carrying the wind socks.

These landing areas will not be marked in any other manner which would indicate an airport suitable for conventional type aircraft.

NOTE:

The following booklets mentioned in this Circular are available upon request by writing to:

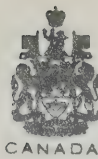
Aeronautical Information and Publications,
Civil Aviation Branch, Department of Transport,
No. 3 Temporary Building,
Ottawa 4, Ontario.

- (1) Minimum Requirements for Airports
- (2) Recommended Minimum Requirements for Airport Lighting
- (3) Recommended Minimum Ice Thickness for Aircraft Operations
- (4) Recommended Standards for Marking Obstructions
- (5) Heliport Design Criteria.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



General Government Publications

0/16/65
15th October

Page 1 of 1

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

GENERAL

(Amending Information Circular 0/30/64)

SECTION I CONSERVATION LAWS

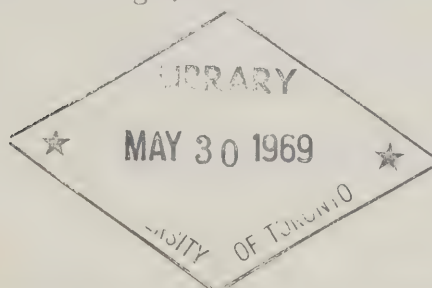
California Bighorn Sheep - British Columbia

In order to prevent the extinction of the California Bighorn Sheep, the Department of Recreation and Conservation, Fish and Game Branch, Victoria, B.C. has placed a herd of these animals in an area near the junction of the Chilcotin and Fraser Rivers.

It has been reported that low flying aircraft are harassing this herd. This action could result in serious consequences which might lead to the eventual extinction of these animals.

In the circumstances, all pilots should avoid flying over the area described as follows at any altitude below 2,000 feet above ground level:

that area bounded by a line commencing at Dog Creek aerodrome latitude 51°38' North; longitude 122°15' West; thence in a north westerly direction to latitude 51°54' North; longitude 123°03' West; thence easterly along the Chilcotin highway to the Fraser River bridge; thence south to the point of commencement.



(R. W. Goodwin),
Director, Civil Aviation.

INFORMATION CIRCULAR



0/3/66
25th January

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

GLIDERS AND GLIDER PILOTS - OPERATIONS AND LICENSING (Amending Information Circular 0/21/64)

Effective immediately, the following supersedes the Section entitled "Tow Pilot Qualifications", on page 10 of Information Circular 0/21/64.

TOW PILOT QUALIFICATIONS

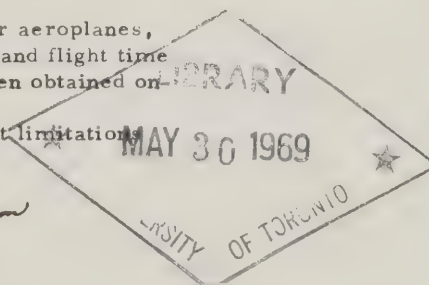
For the purpose of this part, an experienced glider tow plane pilot is a pilot having not less than 100 hours flight time as pilot-in-command on aeroplanes, including not less than 100 glider tow flights.

No person shall act as the pilot-in-command of an aircraft towing gliders unless one of the following requirements are met or exceeded:

- (a) If a tow plane pilot holds a glider pilot licence and has performed 5 training tow flights under in-flight supervision by an experienced glider tow plane pilot, he shall
 - (i) hold a pilot licence valid for aeroplanes,
 - (ii) have acquired not less than 45 hours as pilot-in-command flight time in aeroplanes,
 - (iii) have not less than 5 hours pilot-in-command flight time on the tow plane type;
- (b) If the tow plane pilot is not the holder of a glider pilot licence and has performed 5 training tow flights under in-flight supervision by an experienced glider tow plane pilot, he shall
 - (i) hold a pilot licence valid for aeroplanes,
 - (ii) have acquired not less than 65 hours as pilot-in-command flight time in aeroplanes,
 - (iii) have not less than 5 hours pilot-in-command flight time on the tow plane type; or
- (c) If the tow plane pilot has not performed 5 training tow flights under in-flight supervision by an experienced tow plane pilot and does not hold a glider pilot licence, he shall
 - (i) hold at least a private pilot licence valid for aeroplanes,
 - (ii) have not less than 100 hours pilot-in-command flight time experience, of which 25 hours may have been obtained on gliders, and
 - (iii) be thoroughly familiar with the glider flight limitations and necessary emergency procedures.

R. W. Goodwin

R. W. Goodwin,
Director, Civil Aviation



INFORMATION CIRCULAR



Airmanship

Government
Publication

0/6/66
18th March

Page 1 of 2

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

PROCEDURES FOR USE OF RUNWAY VISUAL RANGE (Superseding Information Circular 0/15/65)

Effective immediately, the following text is to replace the Section entitled "Reporting of Runway Visual Range" on page 18, Section I of Information Circular 0/27/64.

Definitions:

Prevailing Visibility: The maximum visibility value common to sectors comprising one-half or more of the horizontal circle.

NOTE: Prevailing Visibility is determined by human observations.

Runway Visual Range: The maximum distance in the direction of take-off or landing at which the runway or the specified lights or markers delineating it can be seen from a specified point above its centreline from a height corresponding to the average eye-level of pilots at touchdown.

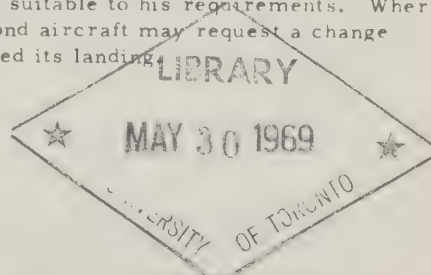
NOTE: Runway Visual Range is determined from information provided by a transmissometer located near the touchdown point on a runway.

General - Prevailing Visibility will continue to be reported and used in the application of take-off and landing minima, except that, for those runways equipped with a transmissometer and digital readout equipment, or other suitable means, pilots may use Runway Visual Range in lieu of Prevailing Visibility in determining the visibility minima. In such cases the following comparative scale shall be used unless otherwise authorized:-

<u>Prevailing Visibility</u>		<u>RVR</u>
1 mile	=	5,000 ft.
3/4 mile	=	4,000 ft.
1/2 mile	=	2,600 ft.
1/4 mile	=	1,600 ft.

The normal RVR reading is predicated on a runway light setting of strength 3; however, if the light settings are increased to strength 4 or 5, a relative increase in the RVR reading will be evident. No decrease in the RVR reading will be evident for light settings of less than setting 3.

In all cases, it is the prerogative of the pilot to request a light setting suitable to his requirements. Where more than one aircraft is conducting an approach, the pilot of the second aircraft may request a change in the light setting if he so desires after the first aircraft has completed its landing.



TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

OPERATIONAL USE OF RUNWAY VISUAL RANGE

The practice of including RVR information in the "Remarks" portion of the Aviation Weather Reports has been discontinued and in no case is RVR to be used for flight planning purposes.

In place of this, RVR information is available in the ATC Arrival Control Sector, the PAR position and the Control Tower for the following runways:

Vancouver International	- Runway 08
Toronto International	- Runways 05L and 10
Montreal International	- Runways 06L and 10

When applicable, Runway Visual Range information will be passed to the pilot as a matter of routine, and may only be used in the determination or application of visibility minima if the active runway is the one served by the transmissometer.

The following procedures will be used during the various phases of a flight:

a) Take-off:

The Tower Controller will provide the pilot with the actual RVR reading prior to take-off if the RVR is less than 6000 feet.

b) Terminal Area Phase: (Inbound)

On handover to Terminal Control, the actual RVR will be passed to the pilot if the reading is less than 6000 feet.

c) Approach and Landing Phase:

On transfer from Terminal Control to the Tower or PAR Controller, RVR will be passed to the pilot when the reading is less than 6000 feet.

NOTE: Runway Visual Range reports are intended to provide an indication of how far the pilot will be able to see along the runway in the touchdown zone; however, the actual visibility at other points along the runway may differ due to the siting of the transmissometer. This should be taken into account when decisions based on reported RVR must be made.

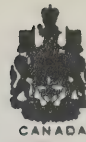
Any significant changes in RVR either upwards or downwards will be passed to the pilot during the three phases described above.

When RVR information is passed to a pilot by an Air Traffic Controller, the light setting, upon which this information is based will be included whenever the lights are adjusted to intensity setting 4 or 5.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Airmanship

0/7/66

5th April

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

TURBULENCE IN THE WAKE OF AIRCRAFT (Amending Information Circular 0/27/64)

With acknowledgment to the Federal Aviation Agency of the United States, the source of reference material used in preparing this circular.

The section dealing with turbulence on pages 20 and 21 of 0/27/64 are to be deleted.

The turbulence that forms in the wake of an aircraft has been broken down into two categories - "thrust stream turbulence" and "wing tip vortices".

Thrust Stream Turbulence - "Prop-wash", "jet wash" and helicopter "down-wash" are forms of thrust stream turbulence. For years this type of turbulence was considered to have been responsible for the rough rides experienced by pilots flying behind other aircraft. Tests have however, shown that "prop/jet wash" should not be a hazard to aircraft in flight except possibly in the case of a take-off or landing in the immediate area of an aircraft making a ground run up and that the turbulence encountered in flight was really "wing tip vortices".

CAUTION - Pilots should avoid taxiing closely behind large aircraft making an engine run up or running up when other smaller aircraft are close behind. At distances of 400-500 feet "prop/jet wash" normally will not constitute a serious hazard to other aircraft operating on the ground.

WING TIP VORTICES - To understand the control problems an aircraft might experience when encountering the severe turbulence which can be created due to "wing tip vortices" one must understand how these vortices are formed. As a lift-producing air foil passes through the air, the air rolls up and back about each wing tip leaving two distinct vortices, one trailing behind each wing tip. If visible, formation of the vortex cores would appear approximately as shown in Figure 1.

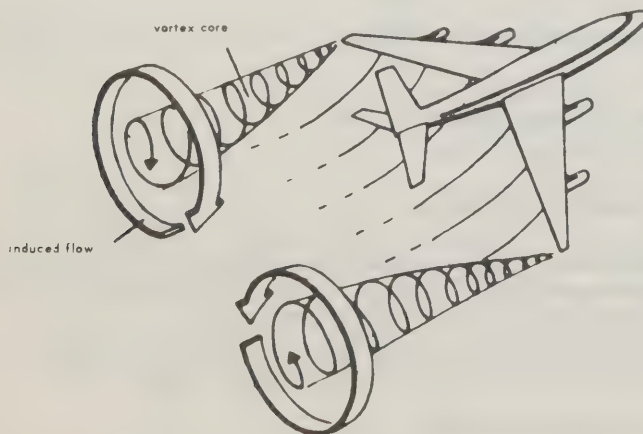
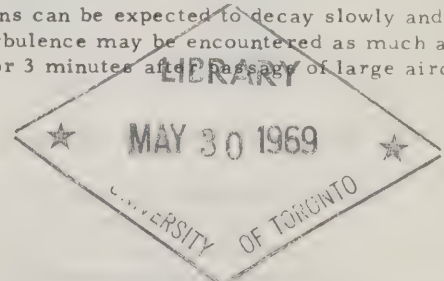


FIGURE 1.-Example of wing-tip vortices initial formation. (Once formed, vortices extend and may be hazardous for an undetermined distance behind the generating aircraft.)

The intensity of the air circulation within the vortex core is directly proportional to the weight and inversely proportional to the wing span and speed of the aircraft. Hence, a practical generalization is that the bigger and more heavily loaded an aeroplane is the more violent the vortices will be particularly when the aircraft is being flown at minimum speed such as at take-off and landing. These vortices settle below and behind the aircraft and under calm air conditions can be expected to decay slowly and turbulence may be encountered as much as 2 or 3 minutes after the passage of large aircraft.



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In the case of a rotary wing aircraft, similar vortices are created by the passage of the rotor blades, when it has more than about 30 knots horizontal speed.

Vortex Turbulence should be avoided for two reasons

- (1) Possible structural failure, and
- (2) loss of control.

Possibility of Structural Failure - When crossing a pair of vortices at large angles (approaching 90°) an aircraft encounters "up-down-down-up" forces. These forces when combined with a pilot's attempt to counteract them could result in the airframe design limits being exceeded and possible structural failure.

LOSS OF CONTROL

When following a heavily loaded large aircraft it is possible to encounter vortices of sufficient magnitude to cause a loss of control. Vortex cores can produce a roll rate of about 80 degrees per second or about twice the roll rate capability of some light aircraft using full aileron. The downward flow of air between the vortices from a heavy jet transport can reach 1500 feet per minute or in other words could exceed the continued climb capability of a small light aircraft. A pilot altering course in an attempt to get out of such a down draft condition could get caught in the roll forces and lose control. These forces have been sufficient to cause aircraft accidents.

HOW TO AVOID WAKE TURBULENCE Since vortices cannot be seen and are subject to so many variable factors (size, weight, and speed of the aircraft and air conditions) it is not possible to accurately forecast their presence. However, it should be remembered that the vortices are carried by the ambient wind and have a downward movement imparted to them when they are shed, and near the ground an outward movement due to cushion effect.

- (1) When it is necessary to operate behind a large heavy aircraft try to remain above the flight path of that aircraft.
- (2) Since aileron control is made more effective by an increase in speed, some reserve over the normal approach and climb out speed, as in gusty conditions, would be an advantage when a pilot anticipates the possibility of encountering turbulent wake while on final approach or during a climb.
- (3) When preparing for take-off or to land remember that wake turbulence from any preceding aircraft will be maximum,
 - (a) at the point of touch down for a landing aircraft and
 - (b) at the point of take-off for a departing aircraft.
- (4) On take-off wake turbulence can best be avoided by,
 - (a) if following an aircraft that has just departed, planning your take-off so as to use sufficient runway to become airborne prior to the point of take-off of the preceding aircraft. A normal climb should keep you above his turbulence.
 - (b) if following an aircraft that has just landed, planning your take-off, if possible, so as to become airborne after the point of touchdown of the preceding aircraft.
- (5) On landing wake turbulence can best be avoided by,
 - (a) if following an aircraft that has just departed, planning your approach to land near the approach end of the runway so as to be down before reaching the point where the preceding aircraft took off.
 - (b) if following an aircraft that has just landed, planning your approach so as to stay on or above the flight path of the previous aircraft and to touch down beyond the point where the preceding aircraft touched down.

- (6) Possible courses of action to avoid wake turbulence on take-off and landing have been depicted in Figure 2.

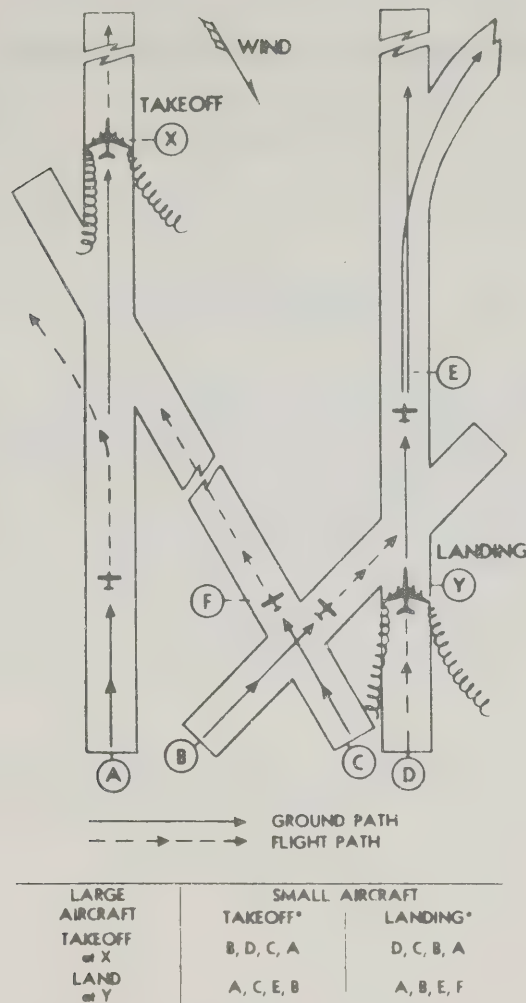


FIGURE 2 — Example Takeoff/Landing Alternative courses of action.

- (7) Remember, even though a clearance for take-off or landing has been issued, if you believe it is safer to wait, use a different runway, or in some other way alter your intended operation, ask the controller for a revised clearance. The controller's primary job is to aid in the prevention of collision between aircraft and, he will assist you in any way he can while accomplishing this job.

M. M. Fleming
M. M. Fleming,
Acting Director, Civil Aviation.

INFORMATION CIRCULAR



0/8/66

5th April

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DEPARTMENT OF TRANSPORT

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MAJOR "ERRORS" OF THE PRESSURE ALTIMETER (Amending 0/27/64)

1. The pressure altimeter used in aircraft is a relatively accurate instrument for measuring flight level pressure but the altitude information indicated by an altimeter, although technically "correct" as a measure of pressure, may differ greatly from the actual height of the aircraft above mean sea level or above ground. In instances of aircraft flying well above the earth's surface, knowledge of the actual distance between the aircraft and the earth's surface is of little immediate value to the pilot except, perhaps, when navigating by pressure pattern techniques. In instances of aircraft operating at no great height above the ground or above the highest ground enroute, especially when on instruments, knowledge of actual ground separation, or of "error" in the altimeter indication, is of prime importance if such separation is less than what would be assumed from the indicated altitude. The following paragraphs review the major altimeter "errors" due to (a) incorrect setting on the subscale, (b) non-standard temperatures and (c) effect of mountains. The procedure for determining the amount of "error" from knowledge of flight level temperature, to the degree that such determination is possible, is reviewed also,

2. Calibration of the Pressure Altimeter - Pressure altimeters are calibrated to indicate the "true" altitude in ICAO Standard Atmosphere conditions. As reference is made in later paragraphs to this Standard Atmosphere, the basic factors affecting altimetry are given below for easy reference.

The ICAO Standard Atmosphere

- i. The air is a perfectly dry gas
- ii. Mean Sea Level pressure: 29.92 inches of mercury
- iii. Mean Sea Level temperature: 15°C
- iv. Rate of decrease of temperature with height is 1.98°C (approx) per 1000 feet to the height at which the temperature becomes -56.5°C, and zero thereafter.

3. Incorrect Setting on the Sub-scale of the Altimeter. Although altimeters are calibrated using the Standard Atmosphere sea level pressure of 29.92", the actual sea level pressure varies hour to hour, and place to place. To enable the "zero" reference to be correctly set for sea level at any pressure within a range of 28.0" to 31.0", altimeters incorporate a controllable device and sub-scale. Whether a pilot inadvertently sets an incorrect pressure on the altimeter sub-scale or sets the correct pressure for one area and then, without altering the setting, flies to an area where the pressure differs, the result is the same - the "zero" reference of the altimeter will not be where it should be but be "displaced" by an amount proportional to 1000 feet indicated altitude per 1" Hg that the sub-scale setting is in error. As pressure decreases with altitude a sub-scale setting that is higher than it should be will "start" the altimeter at a lower level, therefore, A TOO HIGH SUB-SCALE SETTING MEANS A TOO HIGH ALTIMETER READING, that is the aircraft would be at a level lower than the altimeter indicates; A TOO LOW SUB-SCALE SETTING MEANS A TOO LOW ALTIMETER READING, that is the aircraft would be at a level higher than the altimeter indicates. As the first instance is the more dangerous, an example follows:

- (a) A pilot at airport A, 500' asl sets his altimeter to the airport's altimeter setting of 29.80" prior to departure for airport B, 1000' asl, some 400 miles away. A flight altitude of 6000' is selected for the westbound flight so as to clear a 4800' mountain ridge lying across track about 40 miles from B. The pilot does not change the altimeter sub-scale reading until he makes radio contact with B when 25 miles out and receives an altimeter setting of 29.20". Ignoring other possible errors (see below), when the aircraft crossed the mountain ridge the actual ground clearance was only 600 feet, not 1200 feet as expected by the pilot. This illustrates the importance of having the altimeter setting of the nearest airport along the route set on the instrument.

4. Non-Standard Temperatures. i) The only time that an altimeter will indicate the "true" altitude of an aircraft at all levels is when ICAO Standard Atmosphere conditions exist; the likelihood of such an occurrence is negligible. ii) When the current altimeter setting of an airport is set on the sub-scale of an altimeter, the only time a pilot can be certain that the altimeter indicates the "true" altitude is when the aircraft is on the ground at that airport. iii) When 29.92" is set on the sub-scale of an altimeter within the Standard Pressure Setting Region, the altimeter will indicate "true" altitude if ICAO Standard Atmosphere conditions exist, which is unlikely, or if the aircraft is flying at that particular level for which 29.92" would be the altimeter setting, which is also unlikely.

In general then, it can be taken that the altitude indication of an altimeter is always in error due to temperature when an aircraft is in flight. How much will it be in error and how may this error be calculated?

The amount of error will be approximately 4% of indicated altitude for every 11°C that the average temperature of the air column between the aircraft and the "ground" differs from the average temperature of the Standard Atmosphere for the same air column. In practice the average temperature of the air column is not known and "true" altitude is arrived at from knowledge of the outside temperature (OAT) at flight level and use of a computer, or by simple calculations without a computer. The "true" altitude found by either of these methods will be reasonably accurate when the actual lapse rate is, or is near, that of the Standard Atmosphere, i.e. 2°C per 1000', and less accurate otherwise. During the winter when "strong" inversions in the lower levels are likely and altimeters "habitually" over-read, in any situation where ground separation may be marginal, a pilot would be well advised to increase the altimeter error found using flight level temperature by 50%. Consider the aircraft in the above example; assume that the outside air temperature (OAT) at flight level in the vicinity of the mountain ridge was -20°C (-4°F); what was the likely "true" altitude of the aircraft over the mountain ridge?

- (a) Computer: To calculate "true" altitude using a computer the pressure altitude is required. In this case the altimeter indicates 6000' with 29.80" set on the sub-scale, therefore if the pilot altered the sub-scale to 29.92" momentarily, he would read a pressure altitude of 6,120' (see para. 3). Although the indicated altitude is 6000', if the altimeter setting of the nearest airport (B) was set, the indicated altitude would be 5400'. With 29.20" set on the altimeter sub-scale, if the aircraft was on the ground at B, the altimeter would indicate the "true" altitude of 1000'; assuming no pressure difference, it can be taken that the altimeter set to 29.20" would indicate the 1000' level at the mountain with no error due to temperature, therefore temperature error will occur only between the 1000' level and the 5400' level, i.e. 4400' of airspace.
- (i) Set pressure altitude, 6,120', against OAT, -20°C, in the appropriate computer window.
- (ii) Opposite 4400' (44) on the inner scale read 4020' (40.2) on the outer scale.
- (iii) Add the 1000' previously deducted as being errorless and find the "true" altitude of 4020' + 1000' = 5020' asl. The margin of safety is now just over 200' (but see para 4, above, and para. 5).
- (b) Without Computer: Although the average temperature of the air mass between the aircraft and the ground is required to accurately determine temperature error, the error may be closely approximated, in most cases, by using the difference between flight level temperature and the Standard Atmosphere temperature for that level.

- (i) Subtract elevation of airport, the altimeter setting of which is on the altimeter, from the indicated altitude; in this example assuming 29.20" set, $5400' - 1000' = 4400'$.
- (ii) Find difference between OAT and Standard Air temperature for the indicated altitude; in this example -20°C and $+4^{\circ}\text{C}$ (15°C at sea level -2° per 1000' for 5.5 thousands) $= 24^{\circ}$.
- (iii) Multiply difference in temperatures by difference, in thousands of feet, between the airport level and indicated flight level by 4 feet; in this example, $24 \times 4.4 \times 4 = 422.4$ feet; this is the approximate error due to non-standard temperature and, as the actual temperature is colder than Standard, the altimeter will be over-reading, therefore the approximate "true" altitude is $5400' - 422' = 4,978'$. The margin of safety is just under 200'.

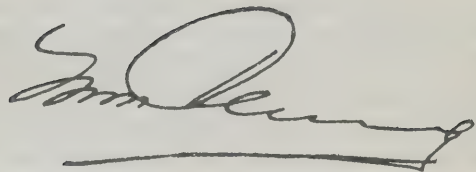
(Note: The actual factor has been "rounded off" to 4 feet per degree per thousand; the small error caused by this step is more than compensated by the greater ease in calculation).

- (c) Pressure Setting Region: When flying within this Region the altimeter must be reset, momentarily, to the altimeter setting of the nearest airport along the route to obtain indicated altitude, or indicated altitude calculated from the altimeter setting (see para 3), and the steps given above followed, or, when over large expanses of water or barren lands where there are no airports, the forecast mean sea level pressure for the time and place must be used to get indicated altitude. In the latter instance "airport" level would be zero, therefore subtraction and addition of airport elevation would not be done. The "true" altitude determined in such a case would be "true" only if the forecast pressure used approximates the actual sea level pressure. (If sea level pressure is not known and pressure altitude is used also as indicated altitude, the resultant "true" altitude will be the "true" altitude above the 29.92" level, wherever they may be in relation to actual mean sea level).

5. Effect of Mountains: i) Winds which are deflected around large single mountain peaks or through the valleys of mountain ranges tend to increase speed which results (Bernoulli's Principle) in a local decrease in pressure. A pressure altimeter within such an airflow would be subject to an increased error in altitude indication by reason of this decrease in pressure (see para. 3). This error will be present until the airflow returns to "normal" speed some distance downwind of the mountain or mountain range. (ii) Winds blowing over a mountain range at speeds in excess of about 50 knots and in a direction perpendicular (within 30°) to the main axis of the mountain range often create the phenomena known as Mountain, or Standing, Wave. The effect of a Mountain Wave often extends as far as 100 miles downwind of the mountains and to altitudes many times higher than the mountain elevation. Although most likely to occur in the vicinity of high mountain ranges, such as the Rockies, Mountain Waves have occurred in the Appalachians, elevation about 4500' asl, (the height of the ridge in our example). Chapter XIX, Weather Ways (Third Edition) covers the Mountain Wave phenomena in some detail, however, aspects directly affecting aircraft "altitude" are reviewed below.

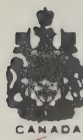
- (a) Downdraft and Turbulence: Downdrafts are most severe near the mountain and at about the same height as the top of the summit. These downdrafts may reach an intensity of about 83'/second (5000'/minute) to the lee of high mountain ranges such as the Rockies. Although Mountain Waves often generate severe turbulence, at times flight through waves may be remarkably "smooth" even when the intensity of downdrafts and updrafts is considerable. As these smooth conditions may occur at night, or when an overcast exists, or when no distinctive cloud has formed, the danger to aircraft is enhanced by the lack of warning of the unusual flight conditions. Consider the circumstances of an aircraft flying parallel to a mountain ridge on the downwind side and entering a smooth, intense, downdraft; although the aircraft starts descending because of the downdraft, due to the local drop in pressure associated with the wave both the rate of climb indicator and the altimeter will not indicate a descent until the aircraft actually descends through a layer equal to the altimeter error caused by the Mountain Wave, and, in fact, both instruments may actually indicate a "climb" for part of this descent; thus the fact that the aircraft is in an intense downdraft may not be recognized until after the aircraft passes through the original flight pressure level which, in the downdraft, is closer to the ground than previous to entering the wave.

- (b) Pressure Drop: The "drop" in pressure associated with the increase in wind speeds extends throughout the Mountain Wave, that is downwind and to "heights" well above the mountains. Isolating the altimeter error due solely to the Mountain Wave from error due to non-standard temperatures would be of little value to a pilot however a pilot should keep in mind that for a given wind speed the error is nearly twice as great in saturated air than it is in unsaturated air. Of main import is that Mountain Waves and non-standard temperatures, in combination, may result IN AN ALTIMETER OVERREADING BY AS MUCH AS 3000 FEET. If the aircraft in our example had been flying upwind on a windy day, the actual ground separation on passing over the crest of the ridge may well have been negligible.



M. M. Fleming,
Acting Director, Civil Aviation.

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MEDICATION AND FLYING (Amending Information Circular 0/27/64)

By permission of the Ministry of Aviation of the United Kingdom the following is reprinted and circulated for the information and guidance of all concerned on the recommendation of the Chief, Civil Aviation Medicine, Department of National Health and Welfare.

1. The attention of all flight crew licence holders is directed to section 408 of the Air Regulations which prohibits a licence holder from acting in a capacity in which a licence entitles him to act when he is suffering from any physical disability that might render him unable to meet the physical standards for the issue or renewal of the licence or his ability to so act is impaired by drugs or alcohol.

2. Although common ailments such as colds, sore throats, abdominal pain and diarrhoea may cause relatively little discomfort or hazard in the normal course of events, they can be dangerous when associated with flying and the more exacting the flying task the more likely are these minor indispositions to be serious. The ideal situation, that anyone flying an aeroplane who requires to take one or other form of medication should not fly until he no longer requires it, is not always practicable. Since many common drugs and remedies have powerful side effects, however, all pilots must know how these may affect their flying performance.

3. Any form of medication, whether on prescription from a Doctor or by casual purchase over the counter, and particularly if being taken for the first time, may have serious consequences in the flying environment unless three basic questions can be satisfactorily answered:-

- (a) Do I really feel fit to fly?
- (b) Must I take medication at all?
- (c) Have I given this particular medication a personal trial on the ground, at least 24 hours before flight to ensure that it will not have any adverse effects whatever on my ability to fly?

Confirming the absence of adverse effects may well need expert advice and Company Medical Officers, General Practitioners experienced in aviation matters, Medical Examiners authorized by the Department of Transport or Regional Medical Officers of the Department of Transport are all available to assist in this matter.

4. The following are some of the types of medication in common use which may impair reactions:-

- (a) Sleeping tablets dull the senses, cause mental confusion and slow reactions. The length of time they act on any individual varies but may be prolonged, and pilots must have expert medical advice before using them.
- (b) Antibiotics (penicillin and various -mycins and -cyclines) and sulfa drugs may have short term or delayed effects which will affect pilot performance. They are also of importance, however, in pointing to the fact that a fairly severe infection must be present to warrant their use. Apart from the effects of the substances themselves therefore, the side effects of the infection will almost always mean that a pilot is not fit to fly.

- (c) Fear is normal and provides a very effective alerting system. Tranquillizers and sedatives depress this alerting system and have been a contributory cause of fatal aircraft accidents. You must not fly when taking them.
- (d) Antihistamine drugs are widely used in "cold cures" and in the treatment of hay fever, asthma and allergic rashes. Many easily obtainable nose spray and drop preparations contain antihistamines. Most, if not all, of this group of medicines tend to make you drowsy. This together with the effects of the illness will often prevent you from answering the three basic questions satisfactorily. Admittedly, very mild conditions of hay fever, etc. may be adequately controlled by small doses of anti-allergic drugs but a trial period on the ground to establish the absence of side-effects is absolutely essential before flying. For those pilots afflicted with allergic conditions requiring more than the absolute minimum treatment and in all cases of asthma there should be no flying at all until one of the above mentioned medical sources of advice has been consulted.
- (e) "Pep" pills (e.g. caffeine, dexedrine, benzedrine) used to maintain wakefulness are often habit forming. Susceptibility to each drug varies from one individual to another but all of them may cause dangerous overconfidence. Overdosage causes headaches, dizziness and mental disturbances. The use of "pep" pills while flying cannot be permitted. If coffee is insufficient, you are not fit to fly.
- (f) Drugs for the relief of high blood pressure cause a change in the mechanism of blood circulation which can be disastrous when flying. If the blood pressure is such that drugs are needed, the pilot is not fit to fly. If in any doubt about your blood pressure, do not hesitate to seek advice.
- (g) Anti-malarial drugs in normally recommended doses do not usually have any adverse effects on flying ability. However, ensure that the drugs are taken in good time so that question 3(c) above can be satisfactorily answered.

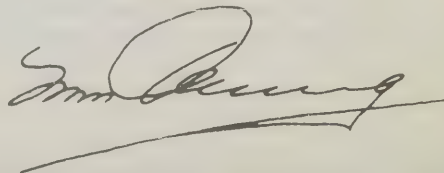
5. Although the drugs referred to above are the commonest groups of drugs with adverse effects on pilot performance, it should be pointed out that many forms of medication although not usually affecting pilot performance may do so if the pilot concerned is over sensitive to the particular drug. You are therefore exhorted not to take any drugs or medicines before or during flight unless you are completely familiar with the effects of the medication on yourself. Again, the medical sources of advice mentioned earlier in the Circular should be consulted in cases of doubt.

6. Alcohol has similar effects to tranquillizers and sleeping tablets and may remain circulating in the blood for a considerable time especially if taken with food. You should not fly less than 8 hours after taking moderate amounts of alcohol and larger amounts require a longer recovery period. Alcohol and sleeping tablets form a lethal combination.

7. Lastly remember that following local and general dental and other anaesthetics a period of at least 48 hours should be spent on the ground and if any doubt remains concerning the right time to resume flying then seek appropriate medical advice.

8. Mention should be made of the fact that blood donation and flying do not mix. Disturbance to the circulation following blood donation takes several weeks to return to normal and although effects are slight whilst at ground level there are risks when flying during this period. It is recommended that pilots do not volunteer as blood donors when actively flying but if blood has been given, an appropriate medical source should be consulted before returning to flying.

9. In summation it is pointed out that the effects of medication on flying performance are the direct concern of the individual pilot. This Information Circular gives some guidance but it cannot be comprehensive. If in doubt consult the medical sources mentioned for advice.



M. M. Fleming,
Acting Director, Civil Aviation.

INFORMATION CIRCULAR



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15th April

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

CONDITIONS OF ISSUE & RENEWAL - FLIGHT CREW LICENCES (Supplementing Information Circular 0/22/63)

APPENDIX "H"

STUDENT GYROPLANE PILOT PERMIT AND GYROPLANE PILOT LICENCE - ULTRA-LIGHT GYROPLANES

1. DEFINITIONS:-

"Designated Person" - one so appointed in writing by the Department for the purpose of supervising and certifying gyroplane student pilots.

"Gyroplane" - a heavier-than-air aircraft supported in flight by the reactions of the air on one or more rotors which rotate freely on substantially vertical axes.

"Ultra-Light Gyroplane" - a gyroplane with a maximum permissible weight not exceeding 1000 lbs. gross weight.

"Gyrocopter" - a power driven gyroplane.

"Gyrolider" - a non-power driven gyroplane.

2. AGE: - An applicant shall have reached his sixteenth (16th) birthday.

3. PHYSICAL FITNESS: - An applicant shall certify that to the best of his knowledge he has no physical defects which might render him unable to pilot a gyroplane. An applicant who by examination is determined to be unfit for issue of a private pilot licence may not be considered fit for issue of a licence.

4. STUDENT GYROPLANE PILOT PERMIT

(a) **KNOWLEDGE** - An applicant shall pass a written examination based on the Air Regulations, Air Navigation Orders, Air Traffic Rules, Information Circulars and Notams;

(b) **SKILL** - He shall demonstrate in towed flight and on the ground his familiarity with, and his ability to perform competently all normal and emergency procedures and manoeuvres common to single place towed gyroplanes. He shall receive instruction from a designated person in the ground operating procedures such as pre-flight inspection, starting, warming up and operating and stopping the engine, taxiing, parking, etc. The demonstration of skill shall be to the satisfaction of the designated person and shall include at least 3 take-offs and landings to a full stop in a gyroplane towed by a line attached to a vehicle on the surface. If the gyroplane is equipped with an engine, engine thrust must not be used during these three take-offs and landings. A designated person shall certify in the applicant's log book that he has observed him competently make at least three take-offs and landings to a full stop in the gyroplane towed by a line attached to the surface vehicle, and is considered competent to make solo flights.

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FORM OF APPLICATION

Applications should be made on forms available at your nearest Department of Transport Air Services Regional Headquarters or may be submitted in typewritten form in the English or French languages as follows:

1. Full name and address.
2. Licence type and number (if you have held a licence).
3. If you have not held a Canadian airman licence, state the Department of Transport office with which you have corresponded in the matter.
4. Describe briefly the circumstances leading up to denial by the Department of the issue or renewal of a licence.
5. State why you feel that safety would not be endangered by the issue or renewal of a licence in your case and notwithstanding the fact that competent medical opinion has already determined that you do not meet the standards.
6. Usual signature above typewritten signature.



R. W. Goodwin,
Director, Civil Aviation.

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2nd May

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AIR SERVICES CIVIL AVIATION BRANCH

INFORMATION CONCERNING THE CONDUCT OF SCATANA TESTS (Amending Information Circular 0/30/64)

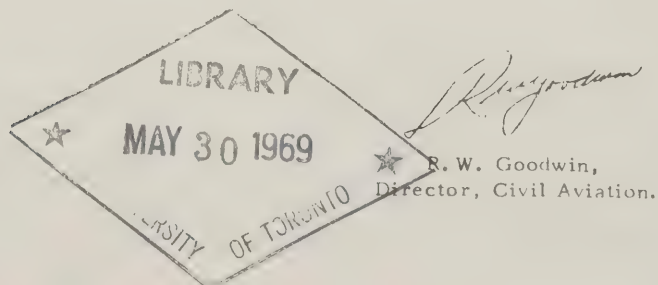
Pilots are advised that procedures have been developed for testing the effectiveness of the agencies and communications facilities which would be employed should it become necessary to implement the Security Control of Air Traffic and Air Navigation Aids Rules (A.N.O. Series V, No. 14, Part VI). These procedures will be exercised from time to time without advance notice.

These tests should in no way inconvenience aircraft in flight other than to make a routine acknowledgement of the test message which may be transmitted to them. The normal test message will read as follows:

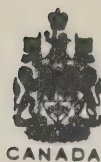
"This is a SCATANA test. Repeat. This is a SCATANA test.

All aircraft will acknowledge this message and continue normal operations."

As these tests are considered essential to national security, the co-operation of all pilots and agencies is necessary.



INFORMATION CIRCULAR



Government
Airmanship Communications

0/13/66
22nd June.

Page 1 of 1

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

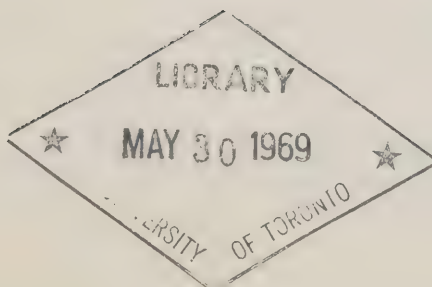
(Amending Information Circular 0/27/64)

Information Circular 0/27/64, AIRMANSHIP, is amended as below:

Page 2. CONTENTS

Under Section 1 TAKE-OFF AND LANDING, lines 13 and 14, delete "IFR Approaches to Airports Not Equipped with Air/Ground Communications Facilities."

Page 18. Delete the heading and paragraphs relating to IFR APPROACHES TO AIRPORTS NOT EQUIPPED WITH AIR/GROUND COMMUNICATIONS FACILITIES.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
Publications
Licences and Endorsements

0/16/66

1st August

Page 1 of 5

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

CLASSIFICATION AND CATEGORIZATION OF FLYING INSTRUCTORS (Amending Information Circular 0/21/64)

Effective immediately, the following supersedes the Section entitled "Classification and Categorization of Flying Instructors" of Information Circular 0/21/64.

CLASSIFICATION AND CATEGORIZATION OF FLYING INSTRUCTORS

The following classifications of civil flying instructor rating may be issued to applicants who hold valid Commercial, Senior Commercial, or Airline Transport Pilot Licences and who meet the appropriate conditions of issue as listed hereunder:

CLASS III CATEGORY (AEROPLANES)

Conditions of Issue

- (a) He shall have completed a minimum of 250 hours as pilot-in-command in aeroplanes.
- (b) He shall pass a written examination on Instructor's General Knowledge and Theory of Flight.
- (c) By means of a flight test, he shall demonstrate that he has average ability in normal flying manoeuvres and is conversant with flying training technique.

Privileges

- (a) To act as a flying instructor in aeroplanes provided that he may do so only while under the direct supervision of an instructor who holds a valid Class I or Class II (airplane) instructor rating until:
 - (i) he has completed 300 hours in-flight instruction in the training of student pilots for a private pilot licence, and
 - (ii) he is in possession of a certificate or log book endorsement signed by the supervising instructor and stating that he is considered competent to authorize first solo flights and first solo cross country flights.
- (b) When an instructor has at least 2000 hours pilot-in-command flight experience or when the experience requirements outlined in (a) have been met, to act as the Chief Flying Instructor at a school not offering Department of Transport approved flying courses.
- (c) When an instructor has at least 2000 hours pilot-in-command flight experience or when the experience requirements outlined in (a) have been met, to act as a flying instructor at a satellite flying school offering the Department of Transport Approved Course of Private Pilot flying training, providing that a written examination on Administration has been satisfactorily completed.

CLASS II CATEGORY (AEROPLANES)

Conditions of Issue

- (a) He shall have completed a minimum of 500 flying hours as a flying instructor in aeroplanes.
- (b) He shall pass a written examination on Administration, Instructor's General Knowledge and Theory of Flight.
- (c) By means of a flight test, he shall demonstrate that he has above average ability in normal flying manoeuvres and is average in flying training technique and instructor's general knowledge.

Privileges

- (a) To exercise the privileges of the holder of a Class III Instructor category.
- (b) To act as the Chief Flying Instructor at a flying school offering the Department of Transport Approved Course of Private Pilot flying training.
- (c) If he has an instrument instruction endorsement, to act as the Chief Flying Instructor at a flying school offering the Department of Transport Approved Course of Commercial Pilot flying training.
- (d) To conduct Private Pilot flight tests.
- (e) To act as Chief Flying Instructor at a satellite flying school offering the Department of Transport Approved Course of Private Pilot flying training.
- (f) To train and recommend for flight test applicants for flying instructor ratings who have not previously held civil flying instructor ratings.

CLASS I CATEGORY (AEROPLANES)

Conditions of Issue

- (a) He shall have completed a minimum of 1500 flying hours as a flying instructor in aeroplanes.
- (b) He shall pass a written examination on Administration, Instructor's General Knowledge and Theory of Flight.
- (c) By means of a flight test, he shall demonstrate that he is exceptional in normal flying manoeuvres, Instructor's General Knowledge and basic instrument flying ability.

Privileges

- (a) To exercise the privileges of the holder of a Class II and Class III instructor category.

A primary consideration for the issuance of an aeroplane instructor rating will be the applicant's knowledge of and ability to apply the principles outlined in the Flying Training Manual and Instructor's Guide, issued by the Department of Transport.

HELICOPTER CATEGORY

Conditions of Issue

- (a) He shall have completed a minimum of 250 hours as pilot-in-command in helicopters.
- (b) He shall pass a written examination on Instructor's General Knowledge and Theory of Flight for rotary wing aircraft.

- (c) By means of a flight test, he shall demonstrate that he has above average ability in normal flying manoeuvres and is conversant with helicopter flying training technique.

Privileges

- (a) To act as a flying instructor in helicopters.
- (b) (i) Upon attaining at least 200 hours as a helicopter flying instructor, to train and recommend for flight test applicants for helicopter instructor ratings who have not previously held civil helicopter instructor rating; and
- (ii) to conduct helicopter flight tests for the Private Pilot Licence.

GYROPLANE CATEGORY

Conditions of Issue

- (a) He shall have completed a minimum of 250 hours as pilot-in-command in gyroplanes.
- (b) He shall have passed a written examination on Instructor's General Knowledge and Theory of Flight appropriate to gyroplanes.
- (c) By means of a flight test, he shall demonstrate that he has above average ability in normal flying manoeuvres and is conversant with gyroplane flying training technique.

Privileges

- (a) To act as a flying instructor in gyroplanes.
- (b) Upon attaining at least 200 hours as a gyroplane flying instructor, to train and recommend for flying test applicants for gyroplane instructor ratings who have not previously held civil gyroplane instructor rating.

A primary consideration for the issuance of a helicopter or gyroplane instructor rating will be the applicant's knowledge of and ability to instruct to a recognized syllabus of training approved by the Department of Transport.

ADDITIONAL AUTHORITY

Authority to conduct aerobatic and/or instrument instruction will be an additional endorsement to any class of category.

INSTRUMENT ENDORSEMENT

To obtain an instrument endorsement, the applicant must:

- (a) Have completed a minimum of 20 hours instrument flight time of which not more than 5 hours may have been acquired in flight simulators.
- (b) Satisfactorily complete the written examination required for the instrument rating.
- (c) Demonstrate his ability to perform all required normal flight manoeuvres with sole reference to basic instruments.
- (d) Demonstrate his ability to instruct on basic instrument flying procedures.
- (e) Demonstrate his knowledge of radio navigational procedures by satisfactorily completing one of the following:
 - (1) A lost orientation and standard range approach.
 - (2) ADF tracking and approach procedures on pre-determined headings.
 - (3) Omnidirectional tracking and approach procedures.

ACROBATIC ENDORSEMENT

To obtain an acrobatic endorsement, the applicant must, by means of a flight test, demonstrate his ability to perform and instruct in the required acrobatic manoeuvres.

ADDITIONAL CLASSES

An aeroplane instructor applying for a helicopter or a gyroplane instructor rating must:

- (a) Have a minimum of 175 hours pilot-in-command flying time in helicopters or gyroplanes.
- (b) Successfully complete the appropriate written examination.
- (c) Submit a certificate from a currently licensed helicopter or gyroplane instructor certifying that he is competent to undergo a flight test.
- (d) Demonstrate by means of a flight test that he has above average ability in normal flying manoeuvres and is conversant with helicopter or gyroplane flying training technique.

A helicopter or gyroplane instructor wishing to qualify for an aeroplane instructor rating must:

- (a) Have a minimum of 175 hours pilot-in-command flying time in aeroplanes.
- (b) Successfully complete the appropriate written examination.
- (c) Submit a certificate from a currently licensed Class I or Class II flying instructor certifying that he is competent to undergo a flight test.
- (d) Demonstrate by means of a flight test that he has above average ability in normal flying manoeuvres and is conversant with flying training techniques.

APPLICATION

An applicant who has not previously held an aeroplane instructor rating must submit a certificate from a Class I or Class II instructor certifying that he has completed a minimum of 12 hours dual instructor training with a Class I or Class II instructor and is competent to undergo a category test.

An applicant who has not previously held a helicopter instructor rating must submit a certificate from a helicopter instructor certifying that he has completed a minimum of 12 hours dual training with a helicopter instructor and is competent to undergo a category test.

An applicant who has not previously held a gyroplane instructor rating must submit a certificate from a gyroplane instructor certifying that he has completed a minimum of 12 hours dual training with a gyroplane instructor and is competent to undergo a category test.

Written application must be made to the Regional Director, Air Services prior to a flight test.

RENEWAL

Class I (Aeroplane) - The rating will normally be issued valid to the 1st day of the thirty-seventh month following the month in which the flight check was conducted.

Class II (Aeroplane) - The rating will normally be issued valid to the 1st day of the twenty-fifth month following the month in which the flight check was conducted.

Helicopter, Gyroplane and Class III (Aeroplane) - The rating will normally be issued valid to the 1st day of the thirteenth month following the month in which the flight check was conducted.

NOTE: Any of the above ratings may be restricted to shorter periods, or otherwise.

Renewal of a rating requires a flight test.

An applicant whose category has lapsed for more than twelve (12) months must submit a certificate from a current Class I or Class II instructor certifying that he is familiar with current instructional technique and is competent to undergo a category test.

Category tests will be conducted only by examiners approved by this Department, in aircraft with a normal system of control, and in the case of aeroplanes capable of being spun, supplied by and at the expense of the applicant.

A handwritten signature in cursive script, appearing to read 'R. W. Goodwin'.

R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
Publications

Flight Crew Licences

0/17/66

1st August

Page 1 of 2

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES (Supplementing Information Circular 0/22/63)

APPENDIX "I"

STUDENT FREE BALLOON PILOT PERMIT

1. AGE - An applicant shall have reached his sixteenth (16th) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated medical examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the twenty-four (24) months preceding the date of issue of the licence if the applicant is under 40 years of age, or, within the twelve (12) months preceding the date of issue if the applicant is forty (40) years of age or over.
3. CERTIFICATE OF COMPETENCY - An applicant will be required to submit a certificate from the holder of a valid Canadian free balloon pilot licence or the holder of a valid free balloon licence issued by a Contracting State, stating that the applicant is competent to undertake solo flight.
4. KNOWLEDGE - An applicant shall satisfactorily complete an examination on the Air Regulations, Air Navigation Orders, Air Traffic Rules, Information Circulars and Notams.
5. PRIVILEGES - The holder of a student free balloon pilot permit may for the purpose of his own flight training act as pilot-in-command of any balloon not carrying passengers, if
 - a) he is under the supervision of the holder of a valid Canadian free balloon pilot licence or the holder of a valid free balloon pilot licence issued by a Contracting State
 - b) all flights on which he so acts are
 - i) under day VFR conditions, and
 - ii) within the territorial limits of Canada.

FREE BALLOON PILOT LICENCE

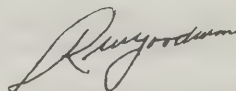
1. AGE - An applicant shall have reached his seventeenth (17th) birthday.
2. PHYSICAL FITNESS - An applicant shall be required to pass a medical examination conducted by a Department of Transport designated examiner in accordance with the Physical Standards for Civil Aviation Personnel Licensing. Such examination shall have been completed during the twenty-four (24) months preceding the date of issue of the licence if the applicant is under 40 years of age, or, within the twelve (12) months preceding the date of issue if the applicant is forty (40) years of age or over.

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MAY 30 1969

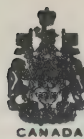
TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

3. KNOWLEDGE - An applicant shall pass a written examination on:
- (a) The Air Regulations, Air Navigation Orders, Air Traffic Rules, Information Circulars and Notams;
 - (b) aerostatics and on meteorology in relation to ballooning;
 - (c) a balloon and its accessories, inflation, rigging, management of an ascent, precautions against cold and high altitudes, as well as patching a ripping seam;
 - (d) the elementary principles of aeronautical charts, and of instruments used in balloons.
4. EXPERIENCE - An applicant shall have completed not less than eight (8) ascents of an average duration of two (2) hours. This total shall include:
- (a) six (6) ascents under instruction;
 - (b) one (1) ascent in control, under supervision of a licensed free balloon pilot, to an altitude of not less than ten thousand (10,000) feet;
 - (c) one (1) ascent as the sole occupant of the balloon.
5. SKILL - An applicant shall demonstrate his familiarity with and his ability to perform both normal ascents and manoeuvres under different circumstances appropriate to the balloon used in the test and with a degree of competency appropriate to that of a free balloon pilot.
6. LICENCE RENEWAL CERTIFICATE - The holder of a free balloon pilot licence may only exercise the privileges attaching to such licence when it is accompanied by a valid Licence Renewal Certificate. A Licence Renewal Certificate may be issued to a licence holder on receipt of a satisfactory medical examination report conducted by a Department of Transport designated medical examiner and such additional information as may be required from time to time. The normal renewal period for a licence holder under forty (40) years of age is twenty-four (24) months and for a licence holder forty (40) years of age or over twelve (12) months, but may be restricted to a shorter period. When the renewal period commences during the twelve (12) months preceding a licence holder's fortieth (40th) birthday the Licence Renewal Certificate will be issued valid to his forty-first (41st) birthday.
7. PRIVILEGES - The holder of a free balloon pilot licence may, under day VFR conditions, act as pilot-in-command of any free balloon.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
Training Publication

0/18/66

8th August

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

DUAL CONTROL AIRCRAFT - OPERATION AND CREDITING OF FLIGHT TIME

1. Operation of Dual Control Aircraft

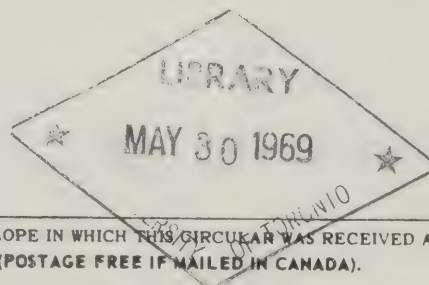
- (a) The pilot-in-command for a flight or any portion of a flight, in a dual control aircraft shall be designated prior to take-off.
- (b) There shall be a satisfactory method of intercommunication between pilots in all aircraft under dual control.
- (c) Flight time for pilots may be credited as dual, pilot-in-command (solo) or co-pilot.
- (d) Only the pilot designated as pilot-in-command, may be credited with pilot-in-command (solo) flight time.

2. In-Flight Instruction (Dual): - Non-Licensed Pilots

- (a) Holders of pilot licences may give initial (ab initio) flight instruction provided they are in possession of an Instructor Rating.
- (b) Passengers shall not be carried on flights when initial (ab initio) flight instruction is being given except as may be otherwise authorized by the Regional Superintendent of Air Regulations.
- (c) When receiving in-flight instruction from an authorized flying instructor, a student pilot may be credited with dual flight time only.
- (d) An instructor may be credited with pilot-in-command flight time when giving in-flight instruction to a student pilot.

3. In-Flight Instruction (Dual): - Licensed Pilots

- (a) The holder of a Commercial, Senior Commercial or Airline Transport Licence may give in-flight instruction for familiarization, refresher and instrument flight training (subject to (b) below) providing the pilot receiving the instruction holds a valid pilot licence endorsed for the type or class of aircraft in the same category as the aircraft used. This authority does not permit category conversion training, e.g., aeroplane to helicopter, gyroplane to aeroplane, etc.



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- (b) Pilots engaged in giving the instrument flight training permitted by (a) above shall meet the minimum qualifications outlined in the Information Circular on Instrument Flying Training.
- (c) The flight time acquired as permitted by (a) and (b) above may be credited to the pilot-in-command as pilot-in-command time and as dual flight time to the pilot receiving the training.
- (d) Not more than three hours of familiarization flight time acquired for any type or class of aircraft may be credited towards the flight time requirement for a higher type of licence.

4. Instrument Flying Practice

- (a) When licensed pilots are engaged in instrument flying practice, only the designated pilot-in-command may be credited with pilot-in-command flight time.
- (b) The pilot undertaking instrument practice, if not the designated pilot-in-command, may be credited with dual flight time.
- (c) The safety pilot, if not the designated pilot-in-command, may be credited with co-pilot flight time if the Certificate of Airworthiness requires a co-pilot on the type of aircraft being used.

5. Co-Pilot: - Non Training

- (a) When licensed pilots are flying a dual control aircraft for purposes other than training or instrument flying practice, only the designated pilot-in-command may be credited with flight time unless the Certificate of Airworthiness requires a co-pilot.
- (b) A pilot may be credited with co-pilot flight time provided he has acted as co-pilot throughout such flight and the Certificate of Airworthiness requires a co-pilot on the type of aircraft concerned.
- (c) The holder of a Private, Commercial or Senior Commercial Pilot Licence may be credited with not more than 50 percent of his co-pilot flight time towards the total flight time required for a higher type pilot licence.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



0/19/66
10th August

Page 1 of 3

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

THE INSTRUMENT RATING (Amending Information Circular 0/21/64)

Delete all of the section under Instrument Rating and substitute the following:

THE INSTRUMENT RATING

GENERAL

- (a) An applicant shall hold a valid Canadian Pilot Licence.
- (b) All tests and examinations for issuance of a rating shall be completed during a twelve (12) month period.
- (c) The instrument rating applies to aeroplanes and helicopters which by virtue of their equipment and operating limitations are authorized for IFR flight.
- (d) The holder of a valid Class I Instrument Rating may, subject to the privileges of his pilot licence, act as pilot-in-command or co-pilot under the Instrument Flight Rules.
- (e) The holder of a valid Class II Instrument Rating may, subject to the privileges of his pilot licence:
 - (i) act as pilot-in-command under the Instrument Flight Rules provided such flight is not a commercial flight;
 - (ii) act as co-pilot under the Instrument Flight Rules.

EXPERIENCE

An applicant for an instrument rating shall have completed not less than:

- (a) 150 hours of flight time as pilot-in-command including not less than 100 hours on the category of aircraft for which an instrument rating is desired;
- (b) 40 hours of instrument time of which not more than 20 hours shall have been completed on approved instrument ground trainers.

KNOWLEDGE

An applicant shall obtain an assessment of at least 70% on the written examination pertaining to the Instrument Flight Rules and Procedures, Flight Navigation and Radio Aids,

- (a) prior to the flight test for initial issue of a rating; and

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MAY 30 1969

UNIVERSITY OF TORONTO

- (b) prior to the flight test for renewal of a rating if it has been invalid for more than twenty-four months.

NOTE: Paragraph (b), immediately above, will not apply to Canadian military pilots holding a valid Canadian Armed Forces instrument rating.

SKILL

- (a) All instrument flight tests will be conducted by authorized Department of Transport Inspectors except that for renewal of an instrument rating the flight test may be conducted by a company pilot designated by the Department of Transport to conduct instrument flight tests of company personnel.
- (b) An applicant for an instrument rating shall demonstrate in flight and solely by reference to instruments, his ability:
 - (i) to perform such manoeuvres as are necessary to establish his competency;
 - (ii) to carry out orientation and approach procedures by the use of radio including the communications procedures required in the circumstances;
 - (iii) to interpret International Morse Code signals transmitted by standard radio navigation aids; and
 - (iv) to operate multi-engine aircraft with one engine inoperative if a rating on such aircraft is sought.
- (c) Subject to Departmental approval and in accordance with the conditions of that approval, an aircraft type simulator may be used for the renewal of instrument ratings.
- (d) Subject to the privileges of the applicant's licence and demonstration of skill, an instrument rating will be valid for:
 - (i) all aeroplanes if the test was completed on a multi-engine aeroplane; or
 - (ii) centre thrust multi-engine and single-engine aeroplanes if the test was completed on a centre thrust multi-engine aeroplane; or
 - (iii) single-engine aeroplanes if the test was completed on a single-engine aeroplane; or
 - (iv) helicopters if the test was completed on a helicopter.

VALIDITY PERIOD

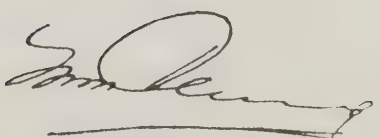
- (a) The CLASS I INSTRUMENT RATING will be issued valid to the 1st day of the seventh month following the month in which the flight test was conducted but the CLASS II INSTRUMENT RATING privileges will continue until the 1st day of the thirteenth month following.
- (b) The CLASS II INSTRUMENT RATING will be issued valid to the 1st day of the thirteenth month following the month in which the flight test was conducted.

IFR - TAKE-OFF AND LANDING WEATHER MINIMA

Unless otherwise authorized, the weather minima for take-off and landing by the holder of an Instrument Rating shall be as specified in Table I for the Class of Rating held.

TABLE I

CONDITION	CLASS I Instrument Rating	CLASS II Instrument Rating
TAKE-OFF MINIMA	Canada Air Pilot	Circling Limits as specified in Canada Air Pilot
LANDING MINIMA	Canada Air Pilot	Alternate Limits as specified in Canada Air Pilot
ALTERNATE MINIMA	Canada Air Pilot	Alternate Limits as specified in Canada Air Pilot plus 500 feet



M. M. Flemming,
Acting Director, Civil Aviation

INFORMATION CIRCULAR



Government
Aerodromes

0/22/66
17th October

1 of 2

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

VISUAL APPROACH SLOPE INDICATOR SYSTEM (amending Information Circular 0/14/65)

Effective immediately, the following supersedes the Section entitled "Visual Approach Slope Indicator System" of Information Circular 0/14/65.

VISUAL APPROACH SLOPE INDICATOR SYSTEM

To enable pilots to maintain a satisfactory angle of approach during final descent to a runway where it has been determined that difficulty may be experienced in judging the approach due to inadequate visual guidance, a 2-colour visual aid known as the Visual Approach Slope Indicator System (VASIS) is being installed at several airports.

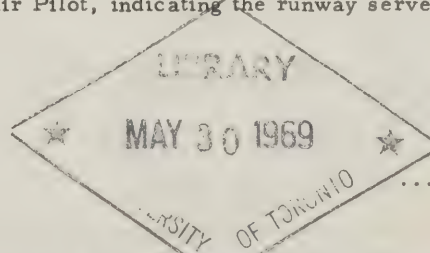
DESCRIPTION

The Visual Approach Slope Indicator System normally consists of 12 light units sited so as to appear to the pilot of an approaching aircraft to be symmetrically disposed about the runway centreline in the form of 2 pairs of runway wing bars, referred to as the upwind and downwind bars, respectively, with each wing bar being composed of 3 light units. The lights forming the downwind bars are normally located 550' inwards from the landing threshold while those forming the upwind bars are 850' further upwind for a VASIS having a 2.5° Approach Slope. For a 3° Approach Slope the standard location for the downwind bars is 450' from the threshold with the upwind bars located 700' further upwind. In some instances the longitudinal distance of the upwind and downwind bars from the threshold will vary, within prescribed tolerances, due to installation difficulties caused by taxiways and intersecting runways, etc. The innermost units are located 55' out from the runway edges. Each light unit projects a beam of light having a white colour in its upper part and a red colour in its lower part. The light units are arranged in such a manner that the pilot of an aircraft during an approach will:

- (a) When below the approach slope, see all the wing bar lights as having a red colour, and
- (b) When on the approach slope, see the downwind wing bar lights white and the upwind wing bar lights red, and
- (c) When above the approach slope, see all the wing bar lights to be white in colour.

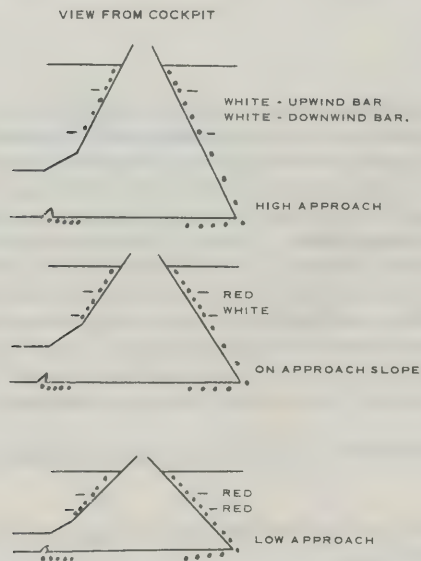
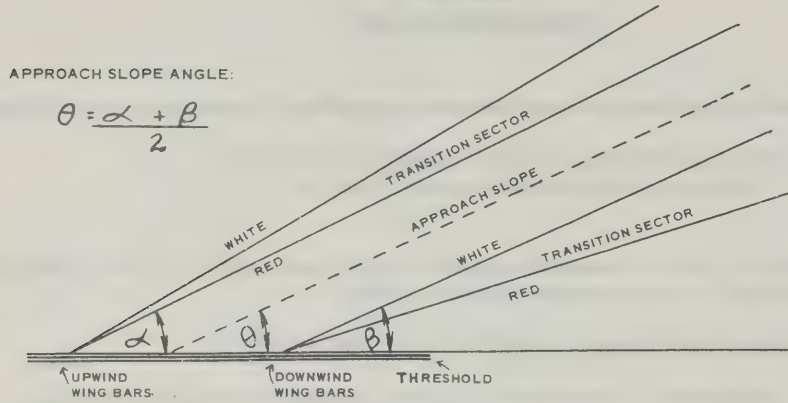
The lights are normally arranged so as to encompass an approach slope angle of 2.5° to a touchdown zone compatible with that provided by ILS or GCA on precision approach runways. The lights are of variable intensities for day and night use as well as for varying conditions of visibility.

Commissioned VASIS will be listed in the Canada Air Pilot, indicating the runway served and the approach slope angle.



.....2

The following diagram describes pictorially a normal VASIS installation and the light combinations which will be viewed from the cockpit at various approach angles.



R. W. Goodwin

R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Personnel Licensing

0/23/66

17th October

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

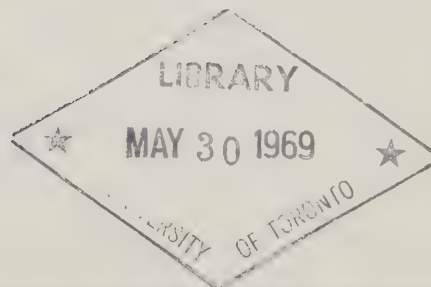
CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES (Amending Appendix "C" of Information Circular 0/22/63)

Effective immediately, the following supersedes Paragraph 4.1 "Experience Helicopters" of Appendix "C", Information Circular 0/22/63.

4.1 EXPERIENCE HELICOPTERS - An applicant for a licence with a HELICOPTER CATEGORY RATING shall have completed not less than:

- (a) thirty-five (35) hours of flight time as pilot-in-command;
- (b) ten (10) hours of cross-country flight time, as pilot-in-command; and
- (c) a minimum of one hundred (100) hours of flight time on helicopters.

(R. W. Goodwin),
Director, Civil Aviation.



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INFORMATION CIRCULAR



Government
Airmanship

0/26/66
29 December

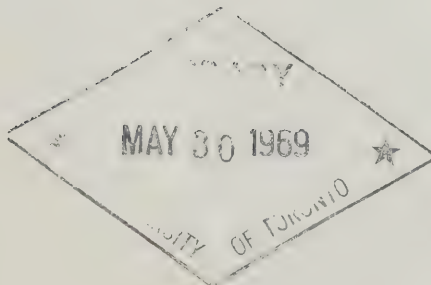
Page 1 of 1

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

PROCEDURES FOR USE OF RUNWAY VISUAL RANGE (Amending Information Circular 0/6/66)

RVR information is now available for runway 05R at Toronto International Airport and not available for runways 05L and 10 as advertised previously.



R. W. Goodwin,
Director, Civil Aviation.

TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

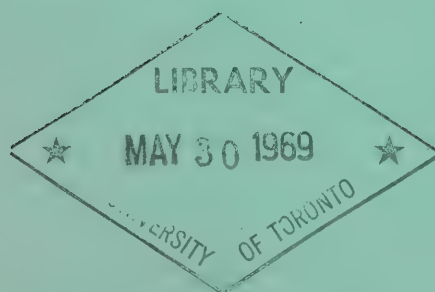


0-3-67



INFORMATION CIRCULAR

**CUSTOMS
AND
IMMIGRATION**



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Customs and Immigration

0/3/67
1st March

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

CUSTOMS CLEARANCE PROCEDURES

and

AUTHORIZED CANADIAN AERODROMES OF ENTRY AND EXIT
(Superseding Information Circular 0/4/65)

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SECTION 1

CUSTOMS NOTIFICATION REQUIREMENTS

Aircraft entering Canada are required to land initially at one of the authorized Canadian customs airports of entry and exit listed in Section 7. Advance notice as to time and place of first arrival must be forwarded to the appropriate officer of customs by mail, telephone or telegraph. If considered advisable the aircraft operator may request the Canadian Customs officer to furnish a reply, which can then be carried into Canada by the pilot. The importance of this will be realized when one considers the possibility of over-flying the intended airport, landing at another place by mistake, or making a forced landing, in all of which cases the reply from the Canadian Customs officer will assist the pilot in making his report to Customs or the Royal Canadian Mounted Police as the case may be. Without such a telegram the aircraft's presence at a place where no advance notice of arrival has been received might cause misunderstanding.

A reciprocal arrangement for notifying Customs and Immigration officials via flight-plans is also available for flights between the United States and Canadian Airports listed in Section 6. If first arrival will be at a port of entry not listed in section 6, it is the pilot's responsibility to notify the appropriate officer of Customs in advance, by mail, telephone or telegraph as indicated above.

SECTION 2

SPECIAL SERVICE AND TRANSPORTATION CHARGES

Pleasure, Military and Government Aircraft

Customs service is provided free of charge for "pleasure", military or government aircraft operating internationally, but transportation charges are assessed when it is necessary for a Customs officer to make a special trip to the airport. The term "pleasure" in this instance includes company-owned aircraft when used solely for health or pleasure. When an aircraft is rented or chartered from an airline, flying club or other type of rental agency, the purpose of the flight rather than the ownership of the aircraft is the determining factor with respect to the assessment of special service charges.

Unscheduled Commercial and Company Aircraft

With the exception of Sundays, where officers are on duty at an airport, service is rendered to unscheduled commercial, chartered and company aircraft without assessment of special service charges. On Sundays special service charges are assessable only when documentation or physical checking of commercial goods intended for clearance or export is necessary.

Where officers are not on duty, service is rendered without charge during the hours of 8 a.m. to 5 p.m., Monday through Saturday. Beyond these hours and on Sundays special service charges are assessable only when documentation or physical checking of commercial goods intended for clearance or export is necessary.

Special service charges are assessed at the rate of \$3.50 per hour or a portion thereof with a minimum payment of \$7.00.

SECTION 3

FORMALITIES ON LANDING

- (a) First landing of aircraft shall be made at the Customs Airport or Airfield where advance notice of arrival has been given.
- (b) On arrival, the owner or pilot of the aircraft shall report to the proper officer of Customs and complete the prescribed form.

SECTION 3 Cont'd

This report will constitute an inward and outward report except as provided for in subsection (d). In the event of a forced landing or diversion to another airport, the pilot is to report the circumstances as soon as possible to the nearest Collector of Customs or to the Royal Canadian Mounted Police.

- (c) Provided the customs officer is satisfied that the aircraft will be used by a non-resident for purposes of health or pleasure only, and not for trade or profit, he will issue a cruising permit on the prescribed form to the owner or pilot for a period not exceeding three months. A company owned aircraft or aircraft rented from an airline, flying club or rental agency may also be issued a permit provided such aircraft will be used solely for purposes of health or pleasure.
- (d) Once the pilot is in possession of a valid permit, further reporting at Customs will not be necessary, either prior to or at time of departure, unless articles were documented on a temporary permit at time of arrival in Canada or unless other goods which require documentary control are being carried on the outward flight. In this event report outward must be filed with Customs at actual time of departure from Canada.

SECTION 4

FORMALITIES ON DEPARTURE

Provided the owner or pilot has a valid cruising permit, further reporting to Customs at time of departure is not necessary, unless goods which require documentary control are being carried on the outward flight.

SECTION 5

LICENSING REQUIREMENTS FOR VISITING PILOTS

The pilot of a visiting aircraft may be required, at the time of his first landing in Canada, to produce his pilot's license and Aircraft Log Book, for examination by Customs, Immigration, Civil Aviation officials or by the Royal Canadian Mounted Police.

A person flying a United States aircraft into Canada must be in possession of a U. S. A. unrestricted certificate of airworthiness for such aircraft and a valid U. S. A. pilot licence, excepting when special permission has been granted in respect of aircraft operating with other than an unrestricted certificate of airworthiness.

A tourist who is a holder of a U. S. A. Pilot Certificate may fly Canadian registered aircraft by obtaining a Temporary Private Pilot Permit (Tourist) on application to the Regional Superintendent, Air Regulations and after having passed a written examination on the Air Regulations and air traffic rules and procedures.

SECTION 6

CANADIAN AND UNITED STATES "ADCUS" AIRPORTS

As a result of an agreement between the Federal Aviation Agency of the United States, the Department of Transport, and the Department of National Revenue, a "Communications-Operation Plan" for Customs notification is in effect. The plan provides that a pilot, when filing a flight plan for a flight to certain Customs authorized Airports, may request that the Customs and Immigration services be notified of the expected time of arrival of the aircraft at a particular airfield. Notification of the expected time of arrival of the aircraft will be through the appropriate airport tower or radio range station as an alternative to notification by telephone or telegraph direct from the pilot. This may be done by adding the abbreviation "ADCUS" in the "OTHER INFORMATION" portion of the flight plan to indicate that Customs and Immigration agencies are to be notified. If the flight is from Canada to the United States, the number of U. S. and non U. S. citizens must be included on the flight plan. If the flight is from United States to Canada, information as to the citizenship of the pilot or passengers is not required by Canadian authorities.

SECTION 6 Cont'd

Airports at which the "Communications-Operation Plan" applies are as follows:

1. Canadian Airports to which "ADCUS" Messages may be Transmitted by Flight Plan:

<u>AIRPORT OF ENTRY</u>	<u>COMMUNICATION STATION</u>	<u>CUSTOMS HOURS OF SERVICE AT AIRPORT</u>
Abbotsford, B. C.	Abbotsford Aeradio	On request
Brandon, Man.	Brandon Aeradio	On request
Calgary, Alta.	Calgary Tower	On request
Chilliwack, B. C.	Abbotsford Aeradio	On request
Cranbrook, B. C.	Kimberley Aeradio	On request
Edmonton International Airport, Alta.	Edmonton International Tower	24 hours
Edmonton Industrial, Alta.	Edmonton Tower	On request
Fort William, Ont.	Lakehead Tower	On request
Fredericton, N. B.	Fredericton Tower	On request
Frobisher, N. W. T.	Frobisher Tower	On request
*Gore Bay, Ont. (1)	Gore Bay Aeradio	On request
Kelowna, B. C. (1)	Penticton Aeradio	On request
Kenora, Ont. (1)	Kenora Aeradio	On request
Lethbridge, Alta.	Lethbridge Tower	On request
London, Ont.	London Tower	0800E-2400E (2)
Medicine Hat, Alta. (1)	Medicine Hat Aeradio	On request
Moncton, N. B.	Moncton Tower	On request
Mont Joli, Que.	Mont Joli Aeradio	On request
Montreal International Airport, Que.	Montreal Tower	24 hours
Muskoka, Ont. (1)	Muskoka Aeradio	On request
Nanaimo, B. C.	Nanaimo Aeradio	On request
North Bay, Ont.	North Bay Tower	On request
Ottawa, Ont.	Ottawa Tower	0800E-2400E (2)
Owen Sound, Ont.	Warton Aeradio	On request
Penticton, B. C. (1)	Penticton Aeradio	On request
Port Hardy, B. C.	Port Hardy Tower	On request
*Quebec, Que.	Quebec Tower	0900-1700E (2)
Regina, Sask.	Regina Tower	On request
Saint John, N. B.	Saint John Tower	On request
Sandspit, B. C.	Sandspit Aeradio	On request
Saskatoon, Sask. (1)	Saskatoon Tower	24 hours
Sault Ste Marie, Ont.	Sault Ste Marie, Ont. Aeradio	On request
Sept-Iles, Que.	Sept-Iles Tower	On request
Sherbrooke, Que.	Sherbrooke Aeradio	On request
Sudbury, Ont. (1)	Sudbury Aeradio	On request
Swift Current, Sask.	Swift Current Aeradio	On request
Toronto International Airport, Ont.	Toronto Tower	24 hours
Toronto Island, Ont. (1)	Toronto Island Tower	On request
Vancouver International Airport, B. C.	Vancouver Tower	24 hours
Victoria International Airport, B. C.	Victoria Tower	0800P-2300P (2)
Whitehorse, Y. T.	Whitehorse Tower	On request
Warton, Ont.	Warton Aeradio	On request
Windsor, Ont.	Windsor Tower	On request
Winnipeg International Airport, Man.	Winnipeg Tower	24 hours
Yarmouth, N. S.	Yarmouth Aeradio	On request

* Customs service available at Gore Bay, Ont. only from 1st May to 30th November annually.

SECTION 6 Cont'd

Customs hours of service at Quebec Airport 09-00-1700E from May 1st to November 30th annually.

- NOTES:
- (1) Airports to be used by tourist planes only.
 - (2) At other hours attendance is on request.
2. United States Airports to which "ADCUS" Messages may be Transmitted by Flight Plan:

ALABAMA

Mobile/Bates Field

ALASKA

Anchorage/Anchorage International
Annette Island/Annette Island
Fairbanks/Fairbanks International
Juneau/Juneau Municipal
Juneau/Juneau SPB
Ketchikan/Ellis Airlines SPB
Northway/Northway
Petersburg/Petersburg SPB
Sitka/Sitka SPB

ARIZONA

Douglas-Bisbee/Bisbee-Douglas International
Nogales/Nogales International
Tucson/Tucson International
Yuma/Yuma International

CALIFORNIA

Calexico/Calexico Municipal
Los Angeles/Los Angeles International
San Diego/Lindberg Field
San Francisco/San Francisco International

CONNECTICUT

Hartford/Brainard Field
Windsor Locks/Bradley Field

DISTRICT OF COLUMBIA

Washington/Dulles International

FLORIDA

Fort Lauderdale/Fort Lauderdale-Hollywood International
Jacksonville/Imeson
Key West/Key West International
Miami/Miami International
Miami/Chalk SPB
St. Petersburg/St. Petersburg-Clearwater International
Tampa/Tampa International
West Palm Beach/Palm Beach International

HAWAII

Honolulu/Honolulu International

ILLINOIS

Chicago/Chicago Meigs Field
Chicago/Midway
Chicago/O'Hare International

SECTION 6 Cont'd

LOUISIANA

New Orleans/New Orleans International (Moisant Field)

MAINE

Bar Harbor/Bar Harbor

Caribou/Caribou Municipal

Houlton/Houlton Municipal

Portland/Portland Municipal

MARYLAND

Baltimore/Friendship International

MASSACHUSETTS

Bedford/Hanscom Field

Boston/Logan International

Worcester/Worcester Municipal

MICHIGAN

Detroit/Detroit Municipal

Detroit/Metropolitan Wayne County

Houghton/Houghton Co. Memorial

Marquette/Marquette County

Pellston/Emmet County

Port Huron/Baker's Field

Port Huron/St. Clair County

Sault Ste. Marie/Sault Ste. Marie Municipal

MINNESOTA

Baudette/Baudette Municipal

Duluth/Duluth International

Duluth/Sky Harbour

International Falls/Falls International

Minneapolis/Minneapolis-St. Paul International (Wold Chamberlain)

Rainer/Rainer International SPB

MONTANA

Cut Bank/Cut Bank

Great Falls/Great Falls International

Havre/Havre City County Airport

NEBRASKA

Omaha/Eppley Airfield

NEW JERSEY

Newark/Newark

NEW MEXICO

Columbus/Columbus

NEW YORK

Albany/Albany County

Buffalo/Greater Buffalo International

Malone/Malone-Dufort Airport

Massena/Richards Field

New York/John F. Kennedy International

New York/La Guardia

Niagara Falls/Niagara Falls Municipal

Ogdensburg/Ogdensburg Municipal

Rochester/Monroe County

Rouses Point/Rouses Point SPB

Syracuse/Hancock

Watertown/Watertown Municipal

Point Pleasant/Point Pleasant SPB

SECTION 6 Cont'd

NORTH DAKOTA

Grand Forks/Grand Forks International
Minot/Minot International
Pembina/Pembina Municipal
Portal/Portal Municipal
Williston/Sloulin Field

OHIO

Akron/Municipal
Akron/Akron-Canton
Cincinnati/Lunken Field
Cleveland/Cleveland Hopkins
Cleveland/Burke Lakefront SPB
Kent/Kent State
Toledo/Toledo Express
Toledo/National
Sandusky/Griffing-Sandusky

OREGON

Portland/Portland International

PENNSYLVANIA

Erie/Port Erie
Philadelphia/Philadelphia International
Pittsburg/Greater Pittsburgh

PUERTO RICO

San Juan/Puerto Rico International

RHODE ISLAND

Providence/Theodore Francis Green Airport

SOUTH CAROLINA

Charleston/Charleston Municipal

TEXAS

Brownsville/Rio Grande Valley International
Corpus Christi/Corpus Christi International
Dallas/Love Field
Del Rio/Del Rio International
El Paso/El Paso International
Houston/Houston International
Laredo/Laredo International
McAllen/Miller International
San Antonio/San Antonio International

VERMONT

Burlington/Burlington Municipal

VIRGIN ISLANDS

St. Thomas/Harry S. Truman

VIRGINIA

Norfolk/Norfolk Municipal

WASHINGTON

Bellingham/Bellingham Municipal
Friday Harbor/Friday Harbor SPB
Oroville/Dorothy Scott
Port Townsend/Port Townsend-City-County

SECTION 6 Cont'd

WASHINGTON (Cont'd)

Port Townsend/Port Townsend Bay
Seattle/Boeing Field
Seattle/Lake Union Air Service (Seaplanes)
Seattle/Seattle-Tacoma International
Spokane/Spokane International
Spokane/Felts Field

WISCONSIN

Green Bay/Austin Straubel
Milwaukee/General Mitchell Field

SECTION 7

AUTHORIZED CANADIAN CUSTOMS AIRPORTS AND AERODROMES OF ENTRY AND EXIT

NOTE: The symbol (*) indicates service restricted to non-commercial traffic. The absence of any symbol indicates use for all purposes.

The symbol (S) indicates that Customs services are available during the summer season only.

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

NEWFOUNDLAND

	Gander	Gander International Airport
#	Goose Aerodrome	Goose Aerodrome
	Stephenville	Stephenville Airport
	St. John's	Torbay Airport

- # 1. Goose Aerodrome is available as an alternate aerodrome to aircraft engaged in flying the North Atlantic.
2. Aircraft engaged in flying the North Atlantic may flight-plan to this aerodrome, both east and westbound, when the regular aerodrome at Gander, Newfoundland, is unusable.
3. Permission may be granted to use this aerodrome if application is made to the Base Commander prior to the commencement of the flight.

NOVA SCOTIA

Halifax	Halifax International Airport Shearwater Aerodrome, Land and Seaplanes (Prior permis- sion from Base Commander req'd)
Middleton	Greenwood Aerodrome (Prior permission from Base Comman- der req'd)
New Glasgow	Trenton Airport

SECTION 7 Cont'd

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

NOVA SCOTIA (Cont'd)

Sydney

Sydney Airport

Yarmouth

* Sydney Harbour for Seaplanes
Yarmouth Airport

PRINCE EDWARD ISLAND

Charlottetown

Charlottetown Airport

Summerside

* Charlottetown Harbour for
Seaplanes
Summerside Aerodrome (Prior
permission from Base Commander
req'd)

NEW BRUNSWICK

Andover

* River Landing for Seaplanes
at Andover

Campbellton

* River Landing for Seaplanes
at Cross Point

Centreville

Chatham

* Florenceville Aerodrome
Chatham Aerodrome (Prior
permission from Base Commander
req'd)

Dalhousie

Edmundston

Fredericton

* Charlo Airport
Edmundston Municipal Airport
Fredericton Airport
River Landing for Seaplanes

Grand Falls

Moncton

Saint John

Saint Stephen

St. Leonard

Woodstock

* Grand Falls Airport
Moncton Airport
Municipal Airport

* Saint Stephen Airport

* River Landing for Seaplanes

* Houlton Airport, Maine, U. S. A.

QUEBEC

Baie Comeau

Municipal Airport
Seaplane Landing Manicouagan
River

Cowansville

Drummondville

* Sweetsburg Airport

* Drummondville Municipal Airport

* Grantham Airport

Gaspé

Granby

Grand'Mère

Lachute

Lac Megantic

* Gaspé Municipal Airport

Granby Airport

Lac A La Tortue for Seaplanes

* Lachute Airport, Ayresville, Que.

* Municipal Airport

* Seaplane Landing on Lac Megantic

Montreal International Airport

Quebec

Montreal International Airport

Quebec Airport

Lake St. Augustin for Seaplanes

Rimouski

* Charlevoix Airport

Rimouski Airport

Seaplane Base at Rimouski Wharf

Mont Joli Airport

SECTION 7 Cont'd

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

QUEBEC (Cont'd)

St. Jean
Sept-Iles

Sherbrooke

Trois-Rivieres
Val d'Or

* Municipal Airport
Sept-Iles Airport
Lake Rapide for Seaplanes
* Sherbrooke Airport
* Brampton Lake for Seaplanes
* Trois-Rivieres Airport
Val d'Or Aerodrome (Prior permission from Base Commander req'd)

ONTARIO

Barrie
Belleville
Bracebridge

Brantford
Brockville

Chatham
Cornwall
Fort Frances

Gananoque

Goderich

Guelph
Hamilton

Hanover
Kenora

Kingston

Kitchener
Lansdowne
Leamington

Lindsay
Little Current

London
Newmarket
North Bay

Orillia

* Barrie Airport
Belleville Airport
* Muskoka Airport
* Lake Landing for Seaplanes at Muskoka Wharf, Gravenhurst (S)
* Brantford Airport
* Brockville Airport
* River Landing for Seaplanes
* Municipal Airport
* River Landing for Seaplanes
* Basswood Lake (S) for Seaplanes
* Prairie Portage (S) for Seaplanes
* Sand Bay, Rainy Lake for Seaplanes
* Sand Point Lake (S) for Seaplanes
International Falls Municipal Airport
* Municipal Airport
* River Landing for Seaplanes
* Lake Landing for Seaplanes
Goderich Airport
* Guelph Air Park
Hamilton Airport
Lake Landing for Seaplanes
* Hanover Airport
* Kenora Airport
Lake Landing for Seaplanes
Kingston Airport
* Lake Landing for Seaplanes
* Waterloo-Wellington Airport
* Lake of the Isles for Seaplanes
* Pelee Island Municipal Airport
* Cottam Airport
* Lindsay Municipal Airport
* Gore Bay Airport (S)
* Lake Landing for Seaplanes
Little Current Airport
* Lake Landing for Seaplanes
London Airport
* Buttonville Airport
North Bay Airport
* Trout Lake Harbour for Seaplanes
* Lake St. John Aerodrome
* Lake Landing for Seaplanes

SECTION 7 Cont'd

CUSTOMS OFFICENAME OF AERODROME
OR LANDING AREAONTARIO (Cont'd)

Oshawa	Oshawa Municipal Airport
Ottawa International	Ottawa International Airport
	Rockcliffe Aerodrome
	River Landing for Seaplanes
Owen Sound	* Owen Sound Airport
	* Lake Landing for Seaplanes
Parry Sound	* Lake Landing for Seaplanes
Pembroke	Pembroke Airport
Perth	* Perth Municipal Airport
Peterborough	* Peterborough Airport
Picton	* Picton Airport
	* Lake Landing for Seaplanes
Port Arthur	Lakehead Airport
	* Lake Landing for Seaplanes
Rainy River	* Baudette Airport, Minnesota, U. S. A.
	* River Landing for Seaplanes
	* Cyclone Island, Lake of the Woods
	* Sturgeon Channel, Lake Landing for Seaplanes (S)
St. Catharines	* St. Catharines Airport
St. Thomas	* St. Thomas Municipal Airport
Sarnia	Sarnia Airport
	* River Landing for Seaplanes (Sarnia Yacht Club)
Sault Ste. Marie	Sault Ste. Marie Airport, Ont.
	* River Landing for Seaplanes
	Airdale Base for Seaplanes
Simcoe	* Simcoe Airport
Smiths Falls	* Smiths Falls Airport
Southampton	* Port Elgin - Saugeen Airport
Sudbury	* Sudbury Airport
	Ramsay Lake Seaplane Base
Tillsonburg	* Tillsonburg Municipal Airport
Timmins	* Timmins Airport
Toronto International Airport	Toronto International Airport
	* Toronto Island Airport (Land and Seaplanes)
Trenton	Trenton Aerodrome (Prior per- mission from Base Commander req'd)
	* Wallaceburg Airport
Wallaceburg	* Municipal Airport
Welland	Warton Airport
Warton	Windsor Airport
Windsor	* River Landing for Seaplanes
Woodstock	* Woodstock Airport

MANITOBA

Boissevain	* Int'l Peace Gardens Airport, North Dakota, U. S. A.
	Municipal Airport
Brandon	* Pembina Airport, North Dakota, U. S. A.
Emerson	* Haskett Aerodrome
Haskett	* Boundary line airstrip for light aircraft
Sprague	Winnipeg International Airport
Winnipeg	

SECTION 7 Cont'd

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

SASKATCHEWAN

Estevan

* Estevan Airport

Moose Jaw

* Border airstrip, Noonan,
North Dakota, U. S. A.
DND Aerodrome (Prior per-
mission from Base Commander
req'd.)

Prince Albert

* West-Air Airport, Moose Jaw North

Regina

* Airstrip at East Poplar River,

Saskatoon

* West Poplar River Airport

Swift Current

Prince Albert Airport

Weyburn

Municipal Airport

Willow Creek

* Saskatoon Airport

Yorkton

* Swift Current Airport

* Weyburn Airport

* Willow Creek Aerodrome

* Yorkton Airport

ALBERTA

Calgary

Municipal Airport

Coutts

* Ross International Airport

Edmonton

Edmonton Industrial Airport

Edmonton International Airport

Namoo Aerodrome (Prior per-
mission from Base Commander
req'd)

Lethbridge

Lethbridge Airport

* Waterton Lakes, Lake Landing
for Seaplanes (S)

Medicine Hat

* Medicine Hat Airport

BRITISH COLUMBIA

Abbotsford

* Abbotsford Airport

Cascade City

* Grand Forks Airport

* Cascade-Laurier (Avey Field)
Aerodrome

Chilliwack

* Chilliwack Airport

Sardis Air Harbour for Seaplanes

Courtenay

* Campbell River Airport

* River Landing for Seaplanes

Cranbrook

* Municipal Airport

* Moyie Lake for Seaplanes

Kamloops

* Kamloops Airport (S)

* Seaplane Base (S)

Kelowna

* Kelowna Airport

* Seaplane Base (City Dock)

Kingsgate

* River Landing for Light Seaplanes
at Rykerts

Nanaimo

Nanaimo Airport

B. C. Airlines Limited Dock
for Seaplanes

Nelson

* Nelson Seaplane Landing

Osoyoos

* Aerodrome at Nighthawk, Wash.

SECTION 7 Cont'd

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

BRITISH COLUMBIA (Cont'd)

Penticton

* Penticton Airport

Port Alberni

* Skaha Lake for Seaplanes

* Alberni Airport

Powell River

* B. C. Airlines Ltd. Dock for
Seaplanes

* Municipal Airport

Prince George

* Powell Lake for Seaplanes

Prince Rupert

* Prince George Airport

Seal Cove, Seaplanes only

* Seaplane Landing at Wrangell,
Alaska

Trail

* Terrace Airport and Sandspit
Airport (Clearance of in transit
aircraft only)

Vancouver

* Castlegar Airport

* Columbia Gardens Airport

Vancouver International Airport
(Land and Water)

Vernon

* Vernon Airport

Victoria

Victorial International Airport (Land &
Water)

* Port Hardy Airport, Land Planes Only

* Bedwell Harbour, Seaplanes Only (S)

YUKON TERRITORY

Dawson

Dawson Airport

River Landing for Seaplanes

Whitehorse

* Old Crow, River Landing for
Seaplanes

Whitehorse Airport

River Landing for Seaplanes

Fort Nelson Airport

Carcross Aerodrome

River Landing for Seaplanes at

Carcross

NORTHWEST TERRITORY

Ottawa, Ontario

Frobisher Airport



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION
CIRCULAR

Air Traffic Control

0/5/67
26th May

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 4

MAY 30 1969

Programme of Data Collection in the
North Atlantic Region

1. In order to obtain up-to-date information on the navigational capability of turbo-jet aircraft in the North Atlantic Oceanic Control Areas, a programme of data collection will be conducted over a period of approximately nine months, commencing 1 July, 1967. The purpose of this circular is to acquaint Canadian aircraft operators who may be operating in the North Atlantic Oceanic Control Areas with the details of the programme and the procedures which they should follow.
2. During the data collection period automatically recorded Secondary Surveillance Radar Observations will be made on a daily basis from stations at Gander in Newfoundland and at Kilkee on the West coast of Ireland. In addition specially equipped vessels will be located at strategic positions and will make similar radar observations during a number of scheduled periods. SSR equipment on aircraft will be used in accordance with instructions issued by the responsible ATC unit. The use of SSR will be based on the 64 code configuration in Mode A/3.
3. Within the overall data collection period, there will be a number of short periods, each of several days, during which an analysis of each flight should be made by reference to the flight documentation (logs, charts, etc.). During these periods every turbo-jet flight operating at flight levels up to and including FL 420, which passes through the area described in paragraph 11, should be analysed.
4. For this post-flight analysis, a special form (referred to as "Form 1-D") has been developed and will be made available to operators by State Administrations or designated organizations. In the case of Canadian operators, forms may be obtained from area control centres at Vancouver, Edmonton, Winnipeg, Toronto, Montreal, Moncton, Gander or Goose.
5. In the case of airlines, the analysis should be made by the airline concerned and the completed analysis forms should be forwarded to the Director, Civil Aviation Branch, Department of Transport, Number 3 Building, Wellington Street, Ottawa.
6. For general aviation operations, the analysis should be made by the operator concerned or, if so desired by the operator, by the analysis team referred to in paragraph 7. The completed form and the flight records (or photo copies) should be sent to the Director, Civil Aviation as soon as practicable after completion of the flight. Should the operator prefer that the analysis be made by the analysis team, the form, partially completed (items other than "off track" details) and the flight records (or photo copy) should be forwarded.
7. To assist airlines and general aviation, a special analysis team will be formed under the general direction of a representative from the Civil Aviation Branch of the Department of Transport and will include representatives from civil and military operators, the Canadian Air Line Pilots Association and the Canadian Air Line Navigators Association. This team will assist operators by reviewing a proportion of the analysis forms together with the associated flight documentation.
8. Special arrangements for the post-flight analysis of military operations are being made.
9. The records to be kept for each flight and the method used for post-flight reconstructions are shown in Appendices A and B to this circular.

10. It is requested that great care be taken by operators to ensure that an accurate and complete record of the in-flight details is kept for the purposes of post-flight analysis. As access to flight records may be requested at times other than when they are required for routine analysis, e.g., for correlation with radar data, it is important that all operators should retain log forms and charts for all NAT flights in the area described below, during the overall period of the programme, for a period of six months from the date of the flight concerned.

11. Description of data collection area

Northern limit: 70° North.

Eastern limit: between 70°N and 61°N the Greenwich meridian, thence westwards along 61°N latitude to 10°W, thence Southward to 51°N and along the Eastern boundary of the Shanwick and Lisboa Oceanic FIRs to Madeira.

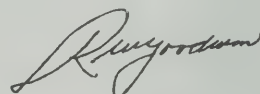
Southern limit: the great circle between Nantucket and Madeira.

Western limit: the Western limit of Sondrestrom, Gander Oceanic and New York Oceanic FIRs from to its intersection with the Southern limit.

12. Periods of flight log analysis

12.1 Flight logs and charts should be analysed for turbo-jet flights occurring in the above area during the following periods in 1967, based on Greenwich Mean Time:

18 - 20 JULY
18 - 20 AUGUST
18 - 24 SEPTEMBER
18 - 20 OCTOBER
18 - 20 NOVEMBER
18 - 20 DECEMBER



R. W. Goodwin,
Director, Civil Aviation.

FLIGHT RECORDS TO BE KEPT FOR THE FLIGHT

DATA COLLECTION

1. Flight records should include the flight log and chart, communications logs, ATC clearances and such working papers as would assist in a detailed post-flight analysis. In addition, in order to enable a correlation to be made with radar observations, the SSR code which is assigned to the aircraft for each flight conducted in the oceanic control area during the 9 month period of data collection should be recorded in the flight logs.
2. Important parameters which should be noted in the record made in the aircraft, insofar as they are normally recorded by individual operators, are, for example:
 - i) the component parts of each position fix together with GMT, navigation computer 'along-' and 'across-' track readings, or inertial read-outs as necessary to enable each fix to be re-plotted, Loran, Consol and sextant readings, VOR radials, ADF bearings, radar observations, etc.;
 - ii) all doppler or inertial computer settings with GMT;
 - iii) GMT at which each compass system is unslaved and re-slaved and the north reference (grid, true, or other) to which the freed compass is set;
 - iv) which compass system is being used for guidance;
 - v) the directional reference used for bearing measurements by ADF, airborne radar, etc. (i.e., true, grid, magnetic, compass, or relative - and in the latter two cases, the compass used);
 - vi) method of track guidance; e.g., following VOR radial, steering headings passed by navigator, following computer cross-track indicator or doppler or inertial auto-pilot tie-in, giving GMT at which changes of method occur;
 - vii) at least one of the following with relevant GMT or position:
 - headings steered and true airspeeds or Mach numbers flown, or
 - tracks set on computer and cross track indications and up-dates, doppler/computer system in use, or
 - read-outs of inertial system in use;
 - viii) when available, spot winds, compass checks, and other such information which could prove useful in reconstruction.
3. In addition to the above examples, which would be recorded in the normal flight documentation, it may be desirable for aircraft to carry on board a form on which to record such extra details as might be needed to complete Form 1-D. Such a form might include the following blocks from Form 1-D:

Name of Operator
 Aircraft Type
 Flight Number
 Registration
 SSR code used
 Navigation Equipment
 Remarks

METHODS OF POST-FLIGHT RECONSTRUCTION

1. Although details will vary, depending on modes of operation, the following steps would appear to be essential:
 - i) all position information should be checked, re-plotting where necessary;
 - ii) the path of the aircraft should be reconstructed with reference to:
 - a) headings steered, compass checks, measured winds and probable change of wind, and/or
 - b) doppler/computer tracks set and compass checks, or
 - c) inertial settings;
 - iii) judgement would need to be used, in weighing the fix reliability against the consistency of the residual system tracking error found between successive fixes;
 - iv) where inadequate records or uncertainty of interpretation precludes reconstruction of any portion of the flight path, this should be stated under remarks in Form 1-D.
2. Any deviations from track should be measured perpendicular to the cleared great circle track.
3. It should be kept in mind that ICAO Regional Supplementary Procedures (DOC 7030) stipulate that "all flights shall be operated on a great circle track joining successive significant points".

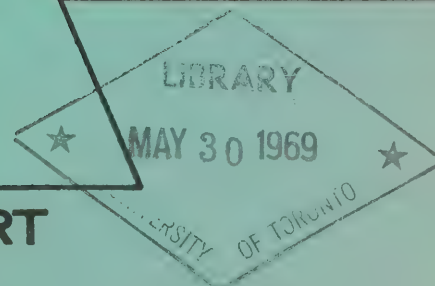


0-6-67



INFORMATION CIRCULAR

**FEES
and
CHARGES**



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Fees and Charges

0/6/67
31st July

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

Page 1 of 9

AIR SERVICES FEES REGULATIONS (Superseding Information Circular 0/3/65) Effective 1 June 1967

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REGULATIONS RESPECTING FEES AND CHARGES FOR
CANADIAN CIVIL AIR SERVICES

SHORT TITLE

1. These Regulations may be cited as the Air Services Fees Regulations.

INTERPRETATION

2. In these Regulations

- (a) "Assistant Deputy Minister, Air" means the Assistant Deputy Minister of the Department;
- (b) "commercial flying school" means a flying school licensed by the Air Transport Board;
- (c) "Department" means the Department of Transport;
- (d) "domestic flight" means a flight between points in Canada;
- (e) "flying club" means a flying club that is a member of the Royal Canadian Flying Clubs Association;
- (f) "international flight" means a flight between Canada and a place outside of Canada that is not a trans-oceanic flight;
- (g) "Minister" means the Minister of Transport;
- (h) "owner" in relation to an aircraft, includes a person operating the aircraft;
- (i) "state aircraft" means an aircraft, other than a commercial aircraft, owned and operated by the government of any country or the government of a colony, dependency, province, state or territory of any country;
- (j) "trans-oceanic flight" means a flight between Canada and a place outside of Canada, Mexico, St. Pierre and Miquelon or United States and that passes over or is intended to pass over the Atlantic Ocean, the Caribbean Sea or the Gulf of Mexico; and
- (k) "weight" in relation to an aircraft means the maximum permissible take-off weight specified in its certificate of airworthiness or in a document referred to therein.

APPLICATION

3. (1) Subject to subsection (2), these Regulations apply to every airport operated by the Department.
- (2) Sections 7, 8 and 9 do not apply to any part of an airport held under a lease granted by Her Majesty in right of Canada.

LANDING FEES

4. (1) Every owner of an aircraft that is based at an airport and that is owned and operated by a flying club or commercial flying school shall pay the fees set out in Schedule A for each landing of the aircraft at that airport.
- (2) Every owner of an aircraft not mentioned in subsection (1) shall pay the fee set out in
- (a) Schedule B for each landing of the aircraft that concludes
 - (i) a domestic flight, or
 - (ii) a planned trans-oceanic flight that was discontinued at an airport in Canada following the commencement of the flight at another airport in Canada;
 - (b) Schedule C for each landing of the aircraft that concludes an international flight; and
 - (c) Schedule D for each landing of the aircraft at an airport that is
 - (i) the last point of landing prior to a trans-oceanic flight, or
 - (ii) the first point of landing after a trans-oceanic flight.

(3) Notwithstanding subsections (1) and (2) every air carrier licensed under subsection (1) of section 15 of the Aeronautics Act shall pay the fee set by the Assistant Deputy Minister, Air, for the landing of an aircraft engaged in the training of aircrew personnel of that air carrier.

TELECOMMUNICATION SERVICE FEE

5. (1) Every owner of an aircraft shall pay a fee of twenty dollars for each flight of the aircraft where the aircraft is engaged on a flight that requires and uses international frequencies and services provided by aeronautical stations listed in Schedule E.
- (2) For the purposes of this section, a flight means the whole of a journey of an aircraft regardless of the number of intermediate stops.

GENERAL TERMINAL CHARGE

6. (1) Every owner of an aircraft of a type listed in Schedule F that uses the air terminal building at an airport to which this section applies for the purpose of embarking or disembarking passengers shall pay the terminal charge set out, for that type of aircraft, in
- (a) Column II of Schedule F where the aircraft is on a domestic flight; or
- (b) Column III of Schedule F where the aircraft is on a non-domestic flight.
- (2) Every owner of an aircraft not listed in Schedule F that uses the air terminal building at an airport to which this section applies for the purpose of embarking or disembarking passengers shall pay the terminal charge prescribed by subsection (1) for the type of aircraft that has a passenger capacity nearest to that of the unlisted aircraft.
- (3) This section applies to the Edmonton, Montreal, Toronto and Winnipeg International Airports.

AIRCRAFT PARKING CHARGE

7. (1) Subject to subsection (2), where an aircraft is placed on any part of an airport other than a hangar for more than six hours the owner of the aircraft shall pay to the officer in charge of the airport the parking charge set out in Schedule G.
- (2) No parking charge is payable, in respect of a private aircraft weighing five thousand pounds or less,
- (a) for the first twenty-four hour period during which the aircraft is parked at an airport listed in Schedule G; or
- (b) for parking at an airport not listed in Schedule G when the aircraft is parked in an area set aside and marked by the officer in charge of the airport as a free parking area.
- (3) The total parking charges for any aircraft parking at an airport shall not exceed
- (a) in any week, the weekly charge determined in accordance with Schedule G; and
- (b) in any month, the monthly charge determined in accordance with Schedule G.
- (4) An owner of an aircraft may, by notifying in writing the officer in charge of an airport, elect to pay
- (a) for the purpose of scheduled flight overnight lay-overs the monthly parking charge set out in Schedule G; and
- (b) for a private aircraft having a weight of five thousand pounds or less, based at an airport where parking charges are payable in respect of the aircraft, the annual parking charge set out in Schedule G.

- (5) For the purpose of this section
- (a) any period of more than six hours but not more than twenty-four hours shall be counted as one day; and
- (b) the area occupied by an aircraft is deemed to be the area obtained by multiplying the overall length of the aircraft by the overall width, including wings, rotors and undercarriage.

HANGAR STORAGE CHARGE

- 8. (1) Where an aircraft is placed in a hangar, the owner of the aircraft shall pay to the officer in charge of the airport the hangar storage charge set out in Schedule H.
- (2) Where arrangements are made with the officer in charge of an airport for storage of an aircraft in a hangar for a continuous period of not less than two months and the aircraft remains in the hangar for such period, the charge set out in Schedule H shall be reduced twenty-five per cent.
- (3) For the purpose of this section, the area occupied by an aircraft is deemed to be the area obtained by multiplying the overall length of the aircraft by the overall width, including wings, rotors and undercarriage.

GOODS STORAGE CHARGE

- 9. (1) Where goods, other than an aircraft, are placed in any part of an airport, the owner or the person causing the goods to be placed on the airport shall pay to the officer in charge of the airport the storage charge set out in Schedule I.
- (2) Where goods are stored in a hangar and occupy less than one-quarter of the floor space of the hangar, the storage charge set out in Schedule I shall be increased by twenty-five per cent.

PAYMENT OF FEES AND CHARGES

- 10. All fees and charges shall be computed to the nearest five cents.
- 11. (1) Fees and charges shall be paid at the place and in the manner prescribed by the Assistant Deputy Minister, Air.
- (2) Notwithstanding subsection (1), the owner of a private aircraft having elected to pay the annual charge prescribed in paragraph (b) of subsection (4), of section 7, shall pay the charge annually in advance to the officer in charge of the airport.
- 12. Notwithstanding anything in these Regulations, the Assistant Deputy Minister, Air, may enter into an agreement with the owner of an aircraft for the payment of a fixed amount in lieu of any fee or charge required under these Regulations.

REMOVAL OF AIRCRAFT OR GOODS

- 13. The officer in charge of an airport may cause any aircraft or goods in respect of which any charge under section 7, 8 or 9 remains unpaid for three months to be removed at the expense and risk of the owner to any place on the airport where they will not interfere with the operation or maintenance of the airport and from the time of that removal no further charge is payable in respect of that aircraft or those goods.

EXEMPTIONS

14. (1) Notwithstanding anything in these Regulations, no fee or charge is payable
- (a) under section 4 in respect of the landing at an airport, other than Toronto, Vancouver, or Montreal International Airports, of
- (i) an aircraft that is not based at the airport and that is owned and operated by a flying club or commercial flying school, if the owner of the aircraft notifies the officer in charge of the airport that the aircraft is engaged in flying training, or
- (ii) a private aircraft weighing not over five thousand pounds.
- (b) under paragraph (a) or (b), of subsection (2) of section 4 in respect of the forced landing at any airport of an aircraft in distress when engaged on a domestic or international flight;
- (c) under paragraph (b) or (c), of subsection (2) of section 4 in respect of the landing of an aircraft at any airport after the discontinuance of a trans-oceanic flight that commenced at another airport in Canada;
- (d) under subsection (2) of section 4 in respect of the landing of an aircraft at an airport from which it took off on a trans-oceanic flight after the discontinuance of the flight; or
- (e) in respect of state aircraft
- (i) under sections 4 and 5 for any landing or flight,
- (ii) under section 6 for general terminal charges provided that it is stationed in a location designated by the officer in charge of the airport,
- (iii) under section 7 for the first thirty days that it remains parked in a location designated by the officer in charge of the airport, and
- (iv) under section 8 for the first forty-eight hours that it remains in a hangar.
- (2) Notwithstanding anything in these Regulations, the Minister may prescribe that no fee or charge is payable in respect of the landing, flight, general terminal charge, parking or storage of any aircraft or class of aircraft.

SCHEDULE A

Flying Club or Commercial Flying SchoolLanding Fees

(section 4 (1))

For each hour flown by the aircraft \$.30

SCHEDULE B

Domestic Flight Landing Fees

(section 4 (2) (a))

- | | | |
|----|--|------|
| 1. | For each 1,000 pounds or fraction thereof of aircraft where weight is not over 45,000 pounds | .20 |
| 2. | For each 1,000 pounds or fraction thereof where weight is | |
| | (a) over 45,000 but not over 100,000 | .25 |
| | (b) over 100,000 | .30 |
| 3. | Minimum fee payable regardless of weight | 1.00 |

SCHEDULE C

International FlightLanding Fees

(section 4 (2) (b))

1. For each 1,000 pounds or fraction thereof of aircraft where weight is

(a) not over 70,000 .....	\$	.25
(b) over 70,000 but not over 147,000 .....		.35
(c) over 147,000 .....		.50
2. Minimum fee payable regardless of weight 1.00

SCHEDULE D

Trans-Oceanic FlightLanding Fees

(section 4 (2) (c))

1. For each 1,000 pounds or fraction thereof of aircraft where weight is

(a) not over 90,000	1.33
(b) over 90,000 but not over 125,000	1.40
(c) over 125,000 but not over 150,000	1.46
(d) over 150,000	1.51

SCHEDULE E

CANADIAN STATIONS OPERATING IN THE INTERNATIONAL
AERONAUTICAL TELECOMMUNICATIONS SERVICE

(section 5)

<u>Station</u>	<u>Call Sign</u>
Churchill, Man.	VAP
Edmonton, Alta.	VFE
Frobisher, N. W. T.	VFF
Gander, Nfld.	VFG
Goose, Nfld.	VFZ
Moncton, N. B.	VFX
Mont Joli, P. Q.	VCF

SCHEDULE E (Cont'd)

Montreal, P. Q.	VFN
Resolute, N. W. T.	VFR4
Sydney, N. S.	VFS
Vancouver, B. C.	VFU
Winnipeg, Man.	VFW5
Yarmouth, N. S.	VFY

SCHEDULE F

General Terminal Charges

(section 6)

<u>Column I</u> <u>Aircraft</u>	<u>Column II</u> <u>On Domestic Flights</u>	<u>Column III</u> <u>Non-Domestic Flights</u>
BAC - VC10	\$ 12.50	\$ 25.00
Boeing 707, 720, 727	12.50	25.00
Douglas DC-8	12.50	25.00
Tupolev TU/114	12.50	25.00
Britannia	10.00	20.00
Convair 990	10.00	20.00
Boeing 737	9.00	18.00
Vanguard	9.00	18.00
Douglas DC7, DC9	8.50	17.50
Locheed Super Constellation	8.50	17.50
BAC 1-11	7.50	15.00
Douglas DC-6	7.50	15.00
Locheed Constellation	7.50	15.00
Locheed Electra	7.50	15.00
Locheed Starliner	7.50	15.00
Sud-Est Caravelle (SE-210)	7.50	15.00
Douglas DC-4	6.00	12.00
Canadair North Star	6.00	12.00
Convair 540, 600, 640	4.50	9.00
Fairchild Friendship	4.50	9.00
Martin 404	4.50	9.00
Vickers Viscount	4.50	9.00
Curtiss 46	4.00	8.00
Douglas DC-3	2.50	5.00

SCHEDULE G

Aircraft Parking Charges Elsewhere Than In A Hangar

(section 7)

1. For each 10 square foot unit of area or portion thereof
 - (a) Per day \$.01
 - (b) Per week06
 - (c) Per month20
 - (d) Per year 1.20
2. Minimum parking charge per day or any part thereof in excess of six hours \$1.00.
3. Where an owner of an aircraft elects to pay the monthly charge with respect to the overnight layovers of a scheduled flight, only one aircraft of the same type or a smaller type may be overnighed for each monthly charge paid. Where an aircraft larger than the one for which a monthly charge has been paid is overnighed at the airport, it shall be charged the daily rate for that type of aircraft.
4. Airports at which free parking privileges are available for the first twenty-four hours to an owner of a private aircraft weighing not over five thousand pounds are

Cartierville	Ottawa International
Edmonton International	Quebec
Fredericton	Saskatoon
Frobisher	Sept-Iles
Gander International	Sydney
Halifax International	Toronto International
Lakehead	Victoria International
London	Vancouver International
Moncton	Windsor
Montreal International	Winnipeg International
North Bay	

SCHEDULE H

Hangar Storage Charges

(section 8)

1. For each 10 square foot unit of area or portion thereof

	<u>Per Day or Portion Thereof</u>
(a) For heated hangars	\$.041
(b) For unheated hangars at Frobisher .....	.038
(c) For unheated hangars at airports other than Frobisher .....	.0223
2. Minimum charge for storage in a heated hangar during the winter season (November 15 to April 15)	\$ 5.00

SCHEDULE I

Goods Storage Charges

(section 9)

1. For each 10 square foot unit of area or portion thereof

	<u>Per Day or Portion Thereof</u>
(a) In all hangars	\$.0164
(b) In a building other than a hangar .....	.01
(c) Elsewhere than in a building .....	.0033



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



0/7/67
1st July

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

INFORMATION CIRCULARS IN EFFECT - 1st JULY, 1967.

1959	1963	1964	1965	1966	1967
0/14/59	0/22/63 0/35/63	0/20/64 0/21/64 0/22/64 0/24/64 0/27/64 0/29/64	0/30/64 0/31/64 0/32/64 0/33/64	0/2/65 0/3/65 0/5/65 0/6/65 0/7/65 0/12/65	0/13/65 0/14/65 0/16/65 0/6/66 0/7/66 0/8/66 0/9/66 0/10/66 0/11/66 0/12/66 0/13/66 0/14/66 0/16/66 0/17/66 0/18/66 0/19/66 0/20/66 0/21/66 0/22/66 0/23/66 0/24/66 0/25/66 0/26/66 0/3/67 0/4/67 0/5/67

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0/4/67	EXPO 67	Montreal, Que.

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0/22/64	CARRIAGE OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES AND SUBSTANCES ON BOARD AIRCRAFT
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MAY 30 1969



0/5/65 AIRCRAFT GENERAL

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0/10/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES

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0/17/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES

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Restricted Radiotelephone Operator's Certificate of Proficiency in Radio
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Gliders and Glider Pilots - Operation and Licensing (Amended by 0/3/66)
Alternate Endorsement of Landplane or Seaplane Authority on Pilot
Licences. (This subject transferred to 0/21/66 - TRAINING.)
Type Endorsement of Aircraft above 12,500 pounds on Pilot Licences
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Pilot Licences - Personnel Canadian Armed Services
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0/3/66 GLIDERS AND GLIDER PILOTS - OPERATION AND LICENSING
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0/25/66 MEDICAL EXAMINERS
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0/29/64 NAVIGATIONAL AIDS AND AIR/GROUND COMMUNICATIONS

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ILS Identifiers
ILS Glide Path Modulation
ILS Localizer - Interference
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Calling Procedures - Radio Telephone
Phonetic Alphabet
VHF Aeronautical Frequency Plan
Communications Principles - Canadian Trans-Atlantic Operations
Use of Frequency 5680 Kc/s
Use of Frequency 122.9 Mc/s
Addressing of Messages Originating in Aircraft

0/12/65 NAVIGATIONAL AIDS - ILS 75 Mcs MARKER BEACONS
0/5/66 NAVIGATIONAL AIDS - USE OF PORTABLE TAPE RECORDERS

SEARCH AND RESCUE

0/31/64 SEARCH AND RESCUE
 The Royal Canadian Air Force Search and Rescue Service
 SARAH Beacon - Operating Instructions and Procedures
 Aircraft Marking
 Ground Air Visual Signal Code
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 Approved Course of Commercial Pilot Training

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0/18/66 DUAL CONTROL AIRCRAFT - OPERATION AND CREDITING OF FLIGHT TIME

0/21/66 PROCEDURES AND STANDARDS - MULTI-ENGINE TRAINING (Revised - See Errata)
 Multi-Engine Training (Revised - See Errata)
 Training for Alternate Endorsement of Landplane or Seaplane
 Authority on a Pilot Licence

Errata Amends 0/21/64 LICENCES AND ENDORSEMENTS; - Revises 0/21/66

0/24/66 ASSISTANCE FOR FLYING TRAINING



R. W. Goodwin,
Director, Civil Aviation,



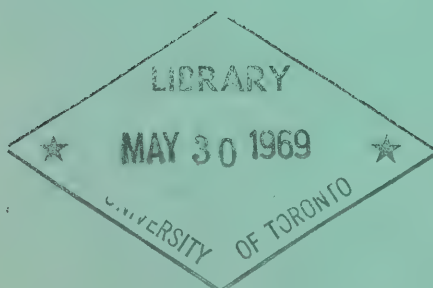
Government
Publications

0-9-67



INFORMATION CIRCULAR

AERONAUTICAL
INFORMATION
SERVICES



DEPARTMENT OF TRANSPORT
CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



0/9/67
4th August

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

Page 1 of 9.

AERONAUTICAL INFORMATION SERVICES (Superseding Information Circular 0/32/64)

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SECTION I

AERONAUTICAL INFORMATION SERVICES

It is essential in the interests of flight safety and efficiency that aircraft operators in Canada have at their disposal, current information concerning the air navigation facilities and services that are available. The Civil Aviation Branch, Department of Transport is responsible for the collection, validation and dissemination of such information for Canadian Airspace. Necessary information is published in Notices to Airmen (NOTAM), Information Circulars, Aeronautical Information Publications and on Aeronautical Charts. Supplementary information is also provided to flights enroute by air traffic control units and aeradio stations.

Basically two general categories of information are disseminated, permanent and temporary. The permanent type information can, when time permits, be published initially in manuals or on charts. When there is insufficient time to include such information in these publications or when the information will be valid for only a short period and is subject to change, it is published either by NOTAM Class I (distribution via teletype) or NOTAM Class II (distribution via mail) depending on the time element involved. In addition, general, administrative and advisory information is published by Aeronautical Information Circular.

The purpose of this circular is to provide a brief description of the publications and services available, together with sources and prices where applicable.

Enquiries concerning civil aviation matters not covered in the above noted publications should be directed to the appropriate Regional Director, Air Services or to the:

Director Civil Aviation,
Department of Transport,
Number 3 Temporary Building,
Ottawa, Ontario.

Regional mailing addresses, telephone numbers and areas of responsibility are in general as follows:

Vancouver Region

Regional Director, Air Services,
Department of Transport,
739 West Hastings Street,
Vancouver 1, British Columbia.

Telephone: 683-4321

(British Columbia, excluding the area north and east of a line ten miles west of the Alaska Highway)

Edmonton Region

Regional Director, Air Services,
Department of Transport,
Federal Building,
9820-107th Street,
Edmonton, Alberta.

Telephone: 424-0251

(Alberta, the Northwest Territories west of the 110th meridian, Yukon Territory and that part of British Columbia north and east of a line ten miles west of the Alaska Highway)

Winnipeg Region

Regional Director, Air Services,
Department of Transport,
Winnipeg General Post Office,
Winnipeg 1, Manitoba.

Telephone: 946-8105

(Manitoba, Saskatchewan, Western Ontario as far east as the 88th meridian and the Northwest Territories lying to the north, more particularly described as follows: That part of Canada bounded by the meridian of 110° West, the Canada-United States border between 110° West and 88° West, the meridian of 88° West between the Canada-United States border and Latitude 60° North, the parallel of 60° North Latitude between 88° W and 80° W and the meridian of 80° West, north of 60° North Latitude but not including Mansel Island.)

Toronto Region

Regional Director, Air Services,
Department of Transport,
P. O. Box 7, Toronto-Dominion Centre,
King Street West, Toronto 1, Ontario.

Telephone: 369-3201

(Ontario east of the 88th meridian)

Montreal Region

Regional Director, Air Services,
Department of Transport,
Montreal International Airport,
Dorval, Quebec.

Telephone: 636-3266

(Quebec and those parts of the Northwest Territories to the north and east of the Winnipeg Region, not including the Magdalen Islands)

Moncton Region

Regional Director, Air Services,
Department of Transport,
P. O. Box 42,
Moncton, New Brunswick.

Telephone: 389-9691

(New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland, including Labrador, and the Magdalen Islands, Quebec)

SECTION II

DISTRIBUTION OF PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM

Aeronautical Information Publications and charts are available at nominal cost as indicated in Section V of this circular.

Information Circulars and NOTAM II as well as amendments to the Air Regulations and Air Navigation Orders are distributed by mail to all licensed pilots, student pilot permit holders, aircraft operators, aircraft owners, chart production agencies and other member ICAO States who wish to subscribe. There is no charge for this service, but names of recipients who do not give prompt notification of address changes are deleted from the mailing list.

Student pilots and new pilot licence holders are provided with current copies of the Air Regulations, Air Navigation Orders, Information Circulars and NOTAM II together with an application form which they may submit to have their name included on the mailing list for these publications. Others who wish to subscribe should forward their request to:

Civil Aviation Branch,
Department of Transport,
Number 3 Temporary Building,
Ottawa, Ontario.
Attn: AIS Publications Office.

NOTAMS I (Distributed by Teletype)

The primary purpose of the Canadian Class I NOTAM service is to notify pilots and other personnel concerned with flight operations, of changes which could affect the safety of flight and which, due to the time element involved, can not be published in appropriate aeronautical information publications or included on charts. Class I NOTAM are distributed via a nation-wide teletype network and are displayed for flight-planning purposes at all major airports. The NOTAM office location at each airport is advertised in the Canada Air Pilot (Pilots Handbook) and in the Air Navigation Radio Aids (ANRA) publication.

There are two Series of Class I NOTAM, Series A and Series B. Series "A" NOTAM are distributed via the Air Operational Teletype Network to provide notification of operational changes or hazards that would affect flight-planning. As a convenience to aircraft operators a summary of all Series "A" NOTAM in effect is issued daily and displayed along with up-dating NOTAM at each NOTAM Office. This information is available for flight-planning purposes and may also be obtained from any aeradio station on request by flights enroute. Series "B" NOTAM are appended to site hourly and special weather reports and distributed via the Meteorological Teletype System. These are issued to notify pilots who are in flight when hazardous or unserviceable conditions develop. Because of the time element involved, changing field conditions due to adverse weather conditions and short term outages of navigational aids are also advertised by this means. Such NOTAM are broadcast along with the weather by the site concerned and at adjacent stations when scheduled weather broadcasts are made to alert flights that are enroute at the time. Information as to prevailing field conditions and local operational changes or hazards is also relayed to arriving or departing flights by voice communications (VOICE ADVISORY MESSAGE) from the air/ground agency at the site concerned.

SECTION III

CONTENTS OF NOTAM II, INFORMATION CIRCULARS, AERONAUTICAL PUBLICATIONS

For the convenience of users, all NOTAM II and Information Circulars have been consolidated by subject for ready reference. These consolidations will be amended and re-issued periodically. They are printed in both English and French on 8" x 10 $\frac{1}{2}$ " paper perforated to fit a standard three-ring binder. Those that are not subject to frequent change are provided with a protective cover.

All current NOTAM II and Information Circulars are now available in this format and the annual book-type consolidation has been discontinued.

The basic subjects for NOTAM II and Information Circulars are as follows:

NOTAM II

Hazards to AIR NAVIGATION.
Special Procedures and Facilities - Land Aerodromes.
Special Procedures and Facilities - Water Aerodromes.
Canadian Airspace Characteristics and Air Traffic Procedures.

NOTE:

Individual NOTAM will be issued as required to provide advance notification of temporary airspace restrictions or changes to designated airspace, national regulations, etc.

INFORMATION CIRCULARS

FLIGHT CREW LICENCES - Conditions of Issue and Renewal

LICENCES AND ENDORSEMENTS

MEDICAL EXAMINERS

TRAINING

AIRCRAFT LICENSING

AIRCRAFT GENERAL

AIRMANSHIP

AERODROMES

SEARCH AND RESCUE

CUSTOMS CLEARANCE PROCEDURES AND AUTHORIZED CANADIAN AERODROMES OF ENTRY AND EXIT

COMMERCIAL AIR OPERATIONS

RADIO NAVIGATIONAL AIDS AND AIR/GROUND COMMUNICATIONS

AIR SERVICES FEES REGULATIONS

AERONAUTICAL INFORMATION SERVICES

* GENERAL

* INFORMATION CIRCULARS of an explanatory or advisory nature concerning matters other than those listed above will be categorized as "GENERAL". These will, in most instances, be issued individually as they cover a wide range of subjects.

SUMMARY

A summary listing all current Information Circulars and NOTAM II is issued on the first of January and July each year.

AERONAUTICAL INFORMATION PUBLICATIONS

REGULATIONS

The Aeronautics Act and Air Regulations are published in a single volume made up as follows:

AIR REGULATIONS

PART I	Short Title and Interpretation
PART II	Aircraft Registration, Certification and Marking
PART III	Aerodromes
PART IV	Personnel Licensing
PART V	Rules of the Air
PART VI	Air Traffic Control
PART VII	Commercial Air Service Operations
PART VIII	Miscellaneous Provisions

AERONAUTICS ACT Parts I, II and III

Air Navigation Orders are published in a single volume made up as follows:

AIR NAVIGATION ORDERS

Series II	Aircraft Registration, Certification and Marking
Series III	Aerodromes
Series IV	Personnel Licensing
Series V	Rules of the Air
Series VII	Commercial Air Service Operations
Series VIII	Miscellaneous Provisions

AERODROMES

The Canada Air Pilot (Pilots Handbook) contains detailed information concerning all major land aerodromes in Canada as well as Instrument or Visual Approach Charts for each site. It is a loose-leaf manual published in two volumes, Winnipeg to the Pacific Ocean and Winnipeg to the Atlantic Ocean.

The Canada Air Pilot Water Aerodrome Supplement contains information concerning water aerodromes in Canada and Visual Approach Charts for major bases. This publication is re-issued in the Spring of each year.

The Canadian Aerodrome Directory lists all recognized airports and aerodromes in Canada. It serves as a directory only and is not intended to provide up-to-date information regarding state of serviceability for flight planning purposes. This publication is re-issued in the Spring of each year.

Aerodrome Obstruction Charts - ICAO Type "A"

These charts have been prepared for selected airports used by operators of large aircraft and provide detailed information with regard to significant obstructions in the approach areas of runways. They are required for flight planning purposes and are distributed to any operator free of charge upon receipt of written request.

Pavement Evaluation Charts

These charts are prepared for distribution to operators of large aircraft and provide detailed information concerning the bearing capacity of runways. They may be obtained free of charge upon receipt of written request giving type of aircraft, gross weight for operation, tire pressure and airport required.

Aerodromes For Use By International Air Traffic

A list of Canadian Aerodromes which may be used by international air traffic is published in the Information Circular entitled - Aerodromes.

AIR TRAFFIC SERVICE SYSTEM

The Designated Airspace Handbook delineates control areas, control zones, intersections, reporting points, flight information regions, identification zones, airways, air routes and prohibited, danger or restricted areas in Canada. It is published every 70 days with amendments at intervening 35 day intervals.

COMMUNICATIONS

The Air Navigation Radio Aids handbook lists all radio communications and navigational aid facilities in Canada that are operated by the Department of Transport. It is published quarterly with amendments once a month.

METEOROLOGY

A description of the weather services available in Canada and instructions on how to use them are published in the pamphlet "Weather Services are Free". This pamphlet is available at most airports and Ports of Entry; it can also be obtained by writing directly to: The Director, Meteorological Branch, Department of Transport, 315 Bloor Street West, Toronto 5, Ontario.

SEARCH AND RESCUE

The Department of National Defence is responsible for co-ordinating and operating the Search and Rescue service in Canada. Details concerning this service are published in the Information Circular entitled - Search and Rescue.

CUSTOMS & AIR TOURIST INFORMATION

The Air Tourist Information, Canada booklet is published as a guide to the air tourist. It provides general information as to clearing Customs, flight-planning in Canada, availability of maps, charts and

other pertinent publications etc. It is distributed by this Department and the Canadian Government Travel Bureau on a request basis, free of charge.

Customs Clearance Procedures and Authorized Canadian Customs Airports and Aerodromes of Entry and Exit are published in the Information Circular entitled - Customs and Immigration.

FEES AND CHARGES

Canadian Air Services Fees Regulations are published in the Information Circular entitled - Fees and Charges.

SECTION IV

AERONAUTICAL CHARTS

As the information required to operate aircraft under instrument flight rules is substantially different than that required for visual flight it is necessary to provide separate types of charts to satisfy each requirement. These are as follows:

CHARTS USED PRIMARILY FOR VISUAL FLIGHT

World Aeronautical Chart Series - Scale 1:1,000,000 (16 miles to one inch)
There are 69 charts in this series to provide Canadian coverage.

Canadian Pilotage Series - Scale 1:500,000 (8 miles to one inch)
There are 219 charts in this series to provide Canadian coverage.

Aeronautical Route Chart Series (16 miles to one inch)
There are 13 charts in this series which provide coverage for the principal airways and air routes in Canada.

CHARTS USED PRIMARILY FOR INSTRUMENT FLIGHT

Enroute-Low Altitude Radio Navigation Charts
There are 10 charts in this series to provide Canadian coverage.

Enroute-High Altitude Radio Navigation Charts
There are 4 charts in this series to provide Canadian coverage.

Terminal Area Charts
There are 16 charts in this series to provide more detailed large scale coverage in congested areas. They are used in conjunction with the Enroute-Low Altitude Charts.

The Enroute Low and High Altitude Charts are re-issued on a cyclic basis every 35 days to ensure that current information is available to users.

Standard Instrument Departure (SID) Charts
There are 19 charts (1 sheet) in this series to provide coded departure routings for major airports. They also are used in conjunction with the Enroute charts.

SECTION V

SOURCES OF SUPPLY AND PRICES

Canadian Publications And Charts

Aeronautical Information Circulars (English & French)
NOTAM Class II (English & French)
Air Tourist Information, Canada, booklet

Available on request from the Aeronautical Information Services Publications Office,
Civil Aviation Branch, Department of Transport, No. 3 Temporary Building, Ottawa 4, Ontario.

Aerodrome Obstruction Charts - ICAO Type "A"
Pavement Evaluation Charts

Available on request from Director Civil Aviation, Department of Transport, #3 Temporary Building, Ottawa, Ontario.

		<u>Price</u>	<u>Catalogue Number</u>
* AIR REGULATIONS (English & French)	Single copy	\$.75	T52-266
* AIR NAVIGATION ORDERS " " "	Single copy	\$.75	T52-2566
AIR NAVIGATION RADIO AIDS	Single copy	\$.40 \$1.50 Yearly	T51-6/19-2

Available from the Publications Branch, Queen's Printer, Ottawa, Ontario. A cheque or money order payable to the Receiver General of Canada must accompany all orders, and the catalogue number should be quoted.

* Also available from the Department of Transport offices listed in Section I.

CANADA AIR PILOT

Pilots Handbook: published in two volumes, Winnipeg to Pacific Ocean and Winnipeg to Atlantic Ocean:

Annual subscription rate per volume	\$7.50
Renewal per volume	\$4.00

Radio Navigation Charts:

Enroute-Low Altitude (including Terminal Area Charts and SID Charts):
12 charts in series revised and re-issued every 35 days.

Annual subscription rate per set (6 sheets-12 charts)	\$6.00
Annual subscription rate per sheet (1 sheet-2 charts)	\$1.50
Individual Sheets	\$.25

Enroute-High Altitude Charts:
4 charts in series revised and re-issued every 35 days.

Annual subscription rate	\$2.50
Individual Sheets	\$.25

Water Aerodrome Supplement: per copy \$1.00

Canadian Aerodrome Directory per copy \$.75

Designated Airspace Handbook - (Amended every 35 days)

Annual subscription	\$2.50
Per copy	\$.50

Available from the Surveyor General, Surveys and Mapping Branch, Department of Energy, Mines and Resources, 615 Booth Street, Ottawa, Ontario.

AERONAUTICAL CHARTS

World Aeronautical, Canadian Pilotage and Aeronautical Route Charts:

per copy	\$.50
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Available from the Map Distribution Office, Department of Energy, Mines and Resources, 615 Booth Street, Ottawa, Ontario.

FOREIGN PUBLICATIONS

Prior to departing for another country it is the aircraft operator's responsibility to obtain the necessary flight information publications and charts from the aeronautical authority of the country concerned.

A listing of the various publications provided by each State, together with prices and the postal address of the aeronautical authority is published by the International Civil Aviation Organization in Document 7383-AIS/503 "Aeronautical Information Services Provided by States". This publication may be obtained from either their Montreal Office, 1080 University Street, Montreal 3, Quebec, or from the Department of Public Printing and Stationery, Ottawa, Ontario, at \$1.25 per copy.

United States Aeronautical Publications and Charts

Aeronautical maps and charts produced by United States Coast and Geodetic Survey may be obtained in Canada from the Canadian Owners and Pilots Association, P.O. Box 734, Station B, Ottawa, Ontario.

United States aeronautical publications are available from:

Superintendent of Documents,
U. S. Government Printing Office,
Washington, D. C. 20402.

Aeronautical charts or flight information documents produced by the U. S. A. F. Aeronautical Chart and Information Centre may be obtained from:

Director,
Coast and Geodetic Survey,
Washington, D. C. 20230.



(R. W. Goodwin),
Director, Civil Aviation.



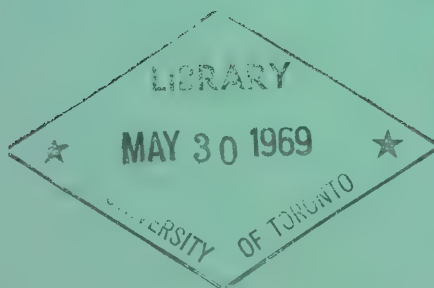
Government
Publications

0-10-67



INFORMATION CIRCULAR

TRAINING



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Training

0/10/67
8th September

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

Page 1 of 20

PERSONNEL LICENSING - TRAINING

(Superseding Information Circulars 0/20/64, 0/14/66, 0/21/66 and 0/24/66)

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Approved Course of Commercial Pilot Training	10
Instrument Flying Training	15
Multi-Engine Training	16
Alternate Endorsement of Landplane or Seaplane Authority on a Pilot Licence	19

TRAINING

ASSISTANCE FOR FLYING TRAINING

1. The Minister of Transport is authorized by Order-in-Council to make grants for pilot flying training conducted after the 1st of January 1949.
- 1.1 Grants may be paid to member clubs of the Royal Canadian Flying Clubs Association, to member schools of the Air Transport Association of Canada or other such association as may be approved by the Minister and to student pilots enrolled in an approved course of Pilot training at these clubs or schools.
- 1.1.1 Agreements are concluded with approved clubs or schools in good standing with their respective associations and with student pilots, subject to the fulfilment of certain conditions including the following:
- 1.2 Payment of Grants to be made as follows:
 - 1.2.1 A flying club or school will receive \$100.00 for each person granted a private pilot licence obtained "ab initio" under the conditions of this Circular at a club or school, provided that no payment will be made in respect of any person who commenced flying training after 31st March, 1961 when 33 years of age or over or who is physically unfit to hold a commercial pilot licence.
 - 1.2.2 Each person so qualifying and receiving a Department of Transport private pilot licence under this scheme will be granted \$100.00, payment thereof, however, being subject to the same proviso contained in paragraph 1.2.1 hereof.
 - 1.2.3 When a student with the approval of the Regional Director of Air Services, transfers from one club or school to another, payment of the \$100.00 grant will be made to the clubs or schools concerned on a pro rata basis.

TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

- 1.3 The payment of such grants referred to in paras. 1.2.1 and 1.2.2 is conditional upon voting of the necessary funds by Parliament.
2. PROCEDURE FOR PARTICIPATION IN THE SCHEME OF ASSISTANCE FOR FLYING TRAINING
 - 2.1 Flying clubs or schools.
 - 2.1.1 The flying club or school shall hold an appropriate Air Transport Board Licence and an operating Certificate issued by the Department of Transport, covering flying training and endorsed "Department of Transport Approved Course of Private Pilot Training".
 - 2.1.2 Flying clubs or schools must comply with the conditions of the Agreement (Appendix I).
 - 2.1.3 The club or school must adhere to the Private Pilot Licensing standards established by the Department of Transport in order to obtain a special endorsement of the Operating Certificate covering an approved course of Private Pilot Training, the club or school must show that it is adequately staffed and equipped to conform with the standard conditions contained in Appendix III. After completing any necessary reorganization, arrangements should be made through the Regional Director, Air Services for inspection of the school facilities.
 - 2.1.4 Agreements prepared in triplicate (Appendix I) should be submitted to the Regional Director, Air Services for execution by the Department.
 - 2.2 Students.
 - 2.2.1 Persons wishing to learn to fly under the scheme of assistance may obtain full information from an approved club or school or from Regional Superintendents, Air Regulations.
 - 2.2.2 Student agreements (Appendix II) may be obtained at approved clubs or schools and must be completed in triplicate.
 - 2.2.3 Training may be commenced immediately on enrolment at an approved club or school. The date of enrolment shall be the date of the first dual flight.
 - 2.2.4 Arrangements should be made with a Department of Transport designated medical examiner for initial examination in respect of physical fitness.
 - 2.2.5 A Student Pilot Permit must be obtained before going solo.
 - 2.2.6 The Regional Superintendent, Air Regulations will issue a Student Pilot Permit on receipt of the following:
 - (i) completed application form,
 - (ii) advice from the Regional Medical Officer of the applicant's physical fitness,
 - (iii) Certification from the Chief Flying Instructor of the candidate's knowledge of the Air Regulations.
3. ADDITIONAL INFORMATION WILL BE FOUND IN APPENDICES TO THIS CIRCULAR.
 - 3.1 Appendix I. Agreement between the Crown and Club or School.
 - 3.2 Appendix II. Agreement between the Crown and the Student.
 - 3.3 Appendix III. Standard Conditions.

APPENDIX I

Assistance for Flying Training

THIS AGREEMENT made this day of A. D.

BETWEEN:

An Operator licensed by the Air Transport Board and represented herein by its President and Secretary duly authorized in that behalf, hereinafter called "the Club"
"the School"

Of the First Part

AND

HER MAJESTY, THE QUEEN, represented herein by the Honourable the Minister of Transport, hereinafter called "the Minister"

Of the Second Part

WHEREAS the Minister deems it desirable to render assistance for flying training in order to increase the safety of civil flying, to ensure a continued supply of pilots for both civil and military purposes and to assist all flying clubs and schools to provide a higher standard of flying instruction,

WHEREAS the Club or School is a member club or affiliate school of the Royal Canadian Flying Clubs Association or Air Transport Association of Canada or such other association as may be approved by the Minister; a central organization for such clubs or schools, is the holder of an Air Transport Board Licence and an Operating Certificate for flying training issued by the Department of Transport and

WHEREAS the said Operating Certificate has been endorsed "Department of Transport Approved Course of Private Pilot Flying Training".

NOW, THEREFORE, THIS AGREEMENT WITNESSETH that in consideration of the premises the parties hereto covenant and agree the one with the other as follows:

1. The Club or School hereby covenants and agrees to fulfil, observe and perform all of those several conditions contained and set forth in the Standard Conditions attached hereto and forming part of this Agreement, which on the part of any Club or School to which the said Standard Conditions apply are required to be fulfilled, observed and performed.
2. The Parties hereto hereby agree that in the application of the said Standard Conditions of this Agreement the said Standard Conditions shall be so construed as if they are incorporated herein and formed part hereof.
3. The Club or School hereby covenants and agrees that any enjoyment by it or by any member thereof of any of the privileges granted by the said Standard Conditions shall be in accordance with the terms thereof.
4. The Club or School hereby covenants and agrees that as a condition precedent to the issue to it by the Minister of the payment of any grants as set forth in the Standard Conditions, it will furnish proof that it is a member in good standing of the Royal Canadian Flying Clubs Association or Air Transport Association of Canada or such other association as may be approved by the Minister, as defined in the said Standard Conditions.

5. The Minister hereby covenants and agrees that conditional upon the fulfilment and observance by the said Club or School of the several terms and conditions contained in this Agreement and the Standard Conditions with the observance and fulfilment of which it is hereby charged, he will pay to the Club or School the sum of \$100.00 in respect to each student of the Club or School who has entered into an agreement with the Minister to undergo flying training at that Club or School and who qualifies for a private pilot's licence; provided, however, that no payment shall be made to the Club or School in respect of any person who commences flying training after 31st March, 1961, when 33 years of age or over or who is physically unfit to hold a Commercial Pilot Licence.
6. The parties hereto hereby agree that this Agreement will terminate on the Thirty-first day of March, One Thousand and Nine Hundred and _____ or on such earlier date as the same may be terminated by the Minister in the manner provided for in the said Standard Conditions.
7. Nothing herein contained shall obligate the Minister to pay the Club or School the said sum of \$100.00 in Clause 5 hereto provided, unless and until the necessary funds have been voted by Parliament in that behalf.

IN WITNESS WHEREOF the Club or School has caused these presents to be executed by its President and Secretary and its corporate seal affixed, and the Minister has caused these presents to be executed by the Deputy Minister of Transport and the corporate seal of the Department of Transport thereto affixed the day and year first above written.

SIGNED, SEALED AND DELIVERED

by the party of the first part in
the presence of

.....
Witness

.....
Deputy Minister of Transport

SIGNED, SEALED AND DELIVERED

by the party of the second part in
the presence of

.....
Witness

.....
Secretary

APPENDIX II

Assistance for Flying Training

THIS AGREEMENT made this _____ Day _____ One Thousand
Nine Hundred and _____

BETWEEN:

of
hereinafter called "the Student"

Of the First Part

AND:

HER MAJESTY, THE QUEEN, in the right of Canada represented herein by the Minister of Transport (hereinafter called "the Minister")

Of the Second Part

WITNESSETH:

1. That the Student, if not already enrolled, agrees to enroll at a flying club or school which has entered into an agreement with the Minister to provide a higher standard of flying instruction in Canada, and shall attend an approved course of flying training without serious interruption except that occasioned by weather or unavoidable cause, which may include failure of the club or school to enable the Student to complete his training.
2. That the Student shall be examined by a medical examiner designated by the Minister and be in possession of a written notice issued on behalf of the Minister certifying physical fitness to hold a Commercial Pilot Licence.
3. That the Student shall not previously have received any pilot flying training in any branch of the Armed Services, so called, and shall not have held a civil pilot's licence of any form, provided, however, that time spent in glider training shall not be deemed pilot flying training.
4. That the Student shall maintain a pilot's log book on a recognized form in which each flight shall be separately entered. On completion of the course the log book shall be certified in the following terms: -

"Certified that
has undergone the Department of Transport
Approved Course of Private Pilot Flying Train-
ing. The flying times shown hereunder are
correct."
.....
Chief Instructor
.....
Student
5. That the Student shall qualify for a Student Pilot Permit issued by the Minister.
6. The Student represents that he is a citizen of Canada or of another Commonwealth country and that, as such, he is entitled under the provisions of Order in Council P. C.1961-45/327 of March 9th, 1961, to receive the grant referred to in paragraph 7 hereof.
7. That the Minister will pay to the Student upon completing an approved course of training at a flying club or school as in Clause No. 1 of this Agreement referred to and upon obtaining a Private Pilot Licence, the sum of One Hundred dollars (\$100.00); provided, however, that no payment shall be made under this clause to the Student who commenced flying training after 31st March, 1961 when 33 years of age or over or who is physically unfit to hold a Commercial Pilot Licence.
8. That this Agreement shall be effective between the parties hereto commencing on the day of 19
9. That nothing herein contained shall obligate the Minister to pay to the Student the sum referred to in Paragraph 7, unless and until the necessary funds have been voted by Parliament in that behalf.
10. That this Agreement may be terminated on behalf of the Minister by notice in writing at any time for any reason including a breach of the Air Regulations or failure of the Student to apply himself diligently to the instruction given, and thereupon all rights and obligations of the Minister and the Student shall cease.

IN WITNESS WHEREOF the parties have executed this Agreement.

SIGNED, SEALED AND DELIVERED

by the party of the first part in
the presence of

.....
Witness

SIGNED, SEALED AND DELIVERED

by the party of the second part in
the presence of

.....
Witness

APPENDIX III

Assistance for Flying Training

Standard Conditions for Flying Clubs and Flying Schools to Qualify for Endorsement "Department of Transport Approved Course of Private Pilot Flying Training" on Operating Certificate

1. Standard conditions referred to in the Agreement between an approved flying club or school and Her Majesty the Queen, represented by the Honourable the Minister of Transport for the payment of grants in respect to flying training and given hereunder.
2. The club or school shall provide a course of ground instruction and flight training equal to or better than the standard laid down for an approved course of training for a private pilot's licence.
3. An approved Course of Training.
 - (a) AEROPLANES
 - (i) Flying training shall consist of a minimum of 35 hours of flying time not less than 12 hours being dual instruction and not less than 12 hours being solo flying. There must be a minimum of 2 hours of dual cross country and 3 hours of solo cross country flying. The solo cross country flying must include a triangular flight of not less than 120 nautical miles and shall include two full stop landings at aerodromes other than the point of departure. The cross country route(s) must be submitted to the Regional Superintendent, Air Regulations for approval prior to the establishment of same by clubs or schools and the approved route(s) must be adhered to throughout all training. In some isolated areas it may not be possible to realistically meet the cross country requirements outlined above. In such cases cross country routes approved by the Regional Superintendent, Air Regulations may be substituted in lieu thereof. In no case however, will the 2 hour dual and 3 hour solo requirement be waived. Emphasis is to be placed on accurate circuit procedure, forced approaches to landings, stalling, incipient spinning, precautionary and powered approaches, and cross wind take-off and landing techniques in addition to other normal manoeuvres.
 - (ii) Flying training must be conducted in accordance with the Flying Training Manual and Instructor's Guide issued by the Department of Transport.

- (iii) The Chief Flying Instructor shall hold a Class I or Class II Instructor's Rating and must be a full time employee of the training organization.
- (iv) A sufficient number of aeroplanes (minimum two conventional controlled types approved by the Regional Superintendent, Air Regulations as suitable for flying training) shall be available and allocated to training to ensure continuity in training after due allowance for periods of unserviceability. In addition to normal engine instruments, these aircraft must be equipped with an airspeed indicator, a turn and bank indicator or an artificial horizon, a sensitive altimeter and a magnetic compass. A reliable time piece must be available to the pilot.

(b) HELICOPTERS

- (i) Flying training shall consist of a minimum of 35 hours of flying time not less than 12 hours being dual instruction and not less than 12 hours being solo flying. There must be a minimum of 2 hours of dual cross country and 3 hours of solo cross country flying. The solo cross country flying must include a flight of not less than 45 nautical miles distance from the point of departure and including a landing at an aerodrome other than the point of departure. The cross country route(s) must be submitted to the Regional Superintendent, Air Regulations for approval prior to the establishment of same by clubs or schools and the approved route(s) must be adhered to throughout all training. In some isolated areas it may not be possible to realistically meet the cross country requirements outlined above. In such cases cross country routes approved by the Regional Superintendent, Air Regulations may be substituted in lieu thereof. In no case however will the 2 hour dual and 3 hour solo requirement be waived.
- (ii) Aircraft Operating Instructions General, Part 8, Section 2, will be used as a guide for flying training and the following basic and precision manoeuvres shall be included in the course. Pre-flight preparation; normal and crosswind landings and take-offs; climbs; descents; straight and level flight; medium banked turns; the circuit; rapid deceleration (quick stops); autorotative landings; hover - upwind; downwind and crosswind; hovering turns 180° and 360° right and left; pattern flying (hover) with constant heading.
- (iii) The Chief Flying Instructor shall have obtained at least 200 hours as a helicopter flying instructor and must be approved by the Regional Superintendent, Air Regulations. The Chief Flying Instructor must be a full time employee of the organization.
- (iv) One helicopter, approved by the Regional Superintendent, Air Regulations as suitable for flying training shall be available and allocated to training. The Regional Superintendent, Air Regulations shall be satisfied that on reasonable notice, a second training helicopter shall be available to insure continuity in training of all students enrolled.

In addition to normal engine instruments, these aircraft must be equipped with an airspeed indicator, a turn and bank indicator or an artificial horizon, a sensitive altimeter and a magnetic compass. A reliable time piece must be available to the pilot.

- (c) A sufficient number of instructors with appropriate ratings shall be engaged to ensure continuity in training of all students enrolled.

- (d) The school or club shall provide class room accommodation with sufficient desks, tables and apparatus to enable ground school to proceed without interruption.
- (e) All requirements for the issue of a Private Pilot Licence including all ground and air training and all written examinations and Flight Test(s) for the approved course of private pilot training must be satisfactorily completed within a 12 month period. The 12 month period shall be taken from the date of enrollment which shall be the date of the first dual flight.
- (f) On completion of the private pilot training the club or school shall submit a Course Report showing the date of commencement and termination of the pupil's training, the total number of hours of dual and solo flight as well as the number of hours of ground school instruction on each subject. This report will be signed by the flying instructor, the ground school instructor and the student.
- (g) The flight test card must be signed by the flight instructor who conducted the test. Flight tests may only be conducted by flight instructors who are qualified to conduct such tests.

4. GROUND TRAINING

- (a) A minimum of 20 hours of ground school lectures will be required. This minimum of 20 hours must be supplemented by satisfactory home study material to be made available by the school.
- (b) The course of lectures should be so arranged that each student has an opportunity to attend every lecture given on all subjects covered by the syllabus. In cases where attendance at scheduled lectures would impose a hardship, individual tuition or coaching may replace formal class room lectures. In any event the combined attendance at scheduled lectures and private coaching must total at least 20 hours.
- (c) The following will indicate the scope of the examination for a private pilot's licence:-
 - (i) Air Regulations and Air Navigation Orders;
 - (ii) Air Traffic Control, Information Circulars and Notam;
 - (iii) Elementary Meteorology;
 - (iv) Airmanship, Theory of Flight, Airframe and Engine care and handling, aircraft operating limitation, air safety and emergency procedures;
 - (v) Elementary Air Navigation including the use of aeronautical charts, simple plotting exercises, magnetic compasses and aircraft instruments;
 - (vi) Understanding of Radio Aids to Navigation and Radio Communication Procedures.
- (d) A pilot's log book on recognized form with proper and accurate entries therein must be maintained by the student.

5. FACILITIES

- (a) A hangar of sufficient size to completely house two aircraft must be provided.
- (b) Adequate maintenance facilities must be provided to ensure the aircraft are maintained in an airworthy condition. Maintenance must be conducted in accordance with specified procedures for the aircraft type.

6. The flying club or school shall be in good standing with the Royal Canadian Flying Clubs Association or the Air Transport Association of Canada or such other association as may be approved by the Minister. The definition of "in good standing" is as follows:

"Membership in good standing" shall mean and include:

- (a) Furnishing such records, including an annual financial statement as may be required by the Executive.
- (b) Complying in all respect with the terms of the Government agreement.
- (c) Paying its proper share of the cost of maintaining the Association.
- (d) Complying with rules, regulations and constitution of the Association.

7. The flying club or school shall be subject to such other regulations as the Minister may from time to time require as a result of inspection of the efficiency of the operation of the flying club or school.

8. Failure on the part of the club or school to comply with the terms of the above Standard Conditions may result in recommendation for removal of the endorsement "Department of Transport Approved Course of Private Pilot Flying Training" on the Operating Certificate of the club or school.

APPROVED COURSE OF COMMERCIAL PILOT TRAINING

1. In order to permit applicants for the Commercial Pilot Licence to benefit from the reduction of the flight experience requirement from 200 hours to 150 hours, as set forth in the Conditions of Issue of this licence, the Department of Transport may approve flying clubs and schools which are adequately equipped and able to train pilots in accordance with the standard conditions outlined in Appendix "A" to this Circular.
2. Departmental approval for flying clubs and schools may be obtained upon application to the appropriate Regional Director, Air Services who will arrange for the endorsement of such approval on the Club or School Operating Certificate.
3. Pilots wishing to undertake an approved course of Commercial Pilot Training may apply directly to an approved club or school or to the Regional Director, Air Services for information in connection with these courses.
4. Before a candidate may be considered eligible for enrolment on the approved course of Commercial Pilot Training, he must hold a valid Private Pilot Licence and be physically fit to hold a Commercial Pilot Licence.
5. The transfer of a student from one approved club or school to another shall not be sanctioned unless the Regional Director, Air Services is satisfied that to withhold such permission would result in hardship to the trainee. When a transfer is authorized, it will be the joint responsibility of the trainee and the club or school concerned to submit to the Regional Director, Air Services in duplicate, a "Course Report" showing the exact amount of training thus far obtained.
6. Additional information concerning the approved course of Commercial Pilot Training may be found in Appendices "A", "B" and "C" hereto.

APPENDIX "A"

Standard Conditions for Flying Clubs and Schools to Qualify for the Endorsement "Department of Transport Approved Course of Commercial Pilot Training" on their Operating Certificate.

Authority to conduct an approved course of Commercial Pilot Training may be granted to flying clubs or schools which are adequately equipped to comply with the standard conditions contained herein.

Training Facilities

- (i) The club or school shall be in possession of a Class "A", Class "B" or Class "C" Flying Training Operating Certificate valid for day and night operations, and must be based within fifty nautical miles of a suitable radio navigation facility.
- (ii) The Chief Flying Instructor shall hold a Class I or Class II Instructor Rating valid for instrument flying instruction.
- (iii) A minimum of two aircraft shall be available for flying training. Equipment on these aircraft may vary provided that in combination there is adequate provision for night flying training and instrument flying training, including the use of two-way radio. The radio installed in the aircraft to be used for instrument flying training must also be capable of providing track guidance by means of one of the following radio aids to navigation:
 - (a) The low frequency radio range
 - (b) The omni-range
 - (c) The radio compass

In addition, the aircraft used for instrument flying training shall be equipped with an instrument panel including at least the following flight instruments:

- (a) Airspeed indicator
 - (b) Sensitive altimeter
 - (c) Turn and bank indicator
 - (d) Magnetic compass
 - (e) Directional gyro
- (iv) Lecture room accommodation with sufficient desks, tables and other equipment necessary to conduct ground school training shall be provided.
 - (v) A Certificate of Enrolment, as shown in Appendix "B", shall be submitted in duplicate for each trainee to the Regional Director, Air Services by the club or school immediately on enrolment. This Certificate shall contain the name and address of the applicant and the number of dual and solo flying hours at the time of enrolment.
 - (vi) On completion of training, the club or school shall submit in duplicate a "Course Report" as shown in Appendix "C".
 - (vii) The duration of an approved course of Commercial Pilot Training shall not exceed twelve months.

Air Training

- (i) Flying training shall be conducted in accordance with the Flying Training Manual and Instructor Guide issued by the Department of Transport. Instruction in instrument flight procedure shall be in accordance with accepted practice.
- (ii) The approved course of Commercial Pilot Training shall include a minimum of sixty hours of flying training as follows:

- Dual Flying - 30 hours
- 8 hours - Advanced instruction directed at the improvement of general flying ability and skill of the trainee including cross-country as necessary.
- *20 hours - Instrument flying including elementary navigation procedures using suitable radio navigational facilities. Two-way radio must also be used to instruct trainees in Air Traffic Control procedures and clearances.
- 2 hours - Night flying.

*A maximum of five hours Link Trainer time may be substituted for instrument air time. However, if this is done, an additional 5 hours dual instruction must be given on other exercises to ensure that a minimum of thirty hours dual flying time is received on the course.

- Solo Flying - 30 hours
- 25 hours - General practice and cross-country including one flight 300 nautical miles with 2 landings at points other than the point of departure.
- 5 hours - Night flying.

- (iii) The times shown in (ii) are minima and when trainees enroll with less than ninety hours of flying experience, the minima shall be increased according to individual requirements. In any case, on completion of the course, the trainee shall have a minimum of one hundred hours solo, forty-two hours of dual and one hundred and fifty hours total flying experience. In addition, all other experience requirements for the issue of a Commercial Pilot Licence shall be complied with.

Ground Training

- (i) Ground school training will consist of at least twenty hours of organized instruction, which shall be given in a properly equipped classroom by a competent instructor. Whenever possible ground instruction shall be closely tied to air training. Ground instruction in each phase shall precede air training so that the student will have a good theoretical knowledge of the air training to be given.
- (ii) Commercial Pilot Applicants who have enrolled for an approved course of training will be permitted to undertake the Departmental written examinations after having completed 100 hours of flight time upon written recommendation from the club or school.
- (iii) The following shall be included in the ground school course:
 - (a) Air Regulations, Air Navigation Orders, Information Circulars and NOTAM, especially those relating to VFR flight. Special attention should be given to regulations, orders, circulars and notices pertaining to safety.
 - (b) Airframes and powerplants - Practical considerations with respect to construction, operating principles and maintenance.
 - (c) Theory of flight and the application of basic principles to aircraft operation and performance.
 - (d) Aviation meteorology, including analysis of weather maps and interpretation of meteorological reports and forecasts.
 - (e) Aircraft instruments, including both engine and navigational instruments and those required for instrument flight. Aircraft compasses including the various errors to which the magnetic compass is subject.
 - (f) Practical air navigation including aeronautical charts, flight planning, DR navigation, navigation on L/F and VOR airways and the use of the navigational computer.
 - (g) Radio including the principles of operation and practical use of the various radio aids to navigation. A thorough knowledge of the use of two-way radio in relation to air traffic control procedures and clearances.
 - (h) Aircraft Operation - Practical airmanship considerations. Weight and balance including the calculation of all-up weight and C. of G. position with respect to C. of G. limits. Documents to be carried in aircraft and entries to be made in various log books.

APPENDIX "B"

Approved Course of Commercial Pilot Training

DEPARTMENT OF TRANSPORT
Civil Aviation Branch

Certificate of Enrolment

Date

Name of Club or School Name of Trainee

Address Address

.....

To: Regional Director, Air Services,
Department of Transport,
.....

This is to certify that has enrolled at this Club or School
on and has agreed to undertake an approved course of
(Date)
Commercial Pilot Training.

His total flying experience at the time of enrolment is as follows:

DUAL

SOLO

TOTAL

Signed:

Manager or C. F. I.

Note: This certificate should be submitted in duplicate.

APPENDIX "C"

DEPARTMENT OF TRANSPORT
Civil Aviation BranchSTUDENT COURSE REPORT
(Commercial Pilot Training)

Student's Name

Address

Training commenced on Training completed on

Flying Club or School Private Pilot Licence No.

.....

AIR TRAINING

Dual Hours	On Course	Previous	Solo Hours	On Course	Previous
General Dual	General Practice	.....	.....
Instrument Flying	Night Flying	.....	.....
Night Flying	Cross-Country	.....	.....
Total Dual Hours		Total Solo Hours	.....
TOTAL FLYING HOURS ON COURSE					
TOTAL FLYING HOURS ON COURSE AND OTHERWISE					

GROUND TRAINING ON COURSE

Link Trainer Time Lecture Hours

Certified correct

.....
Student's Signature

This is to certify that the times noted above are correct, that this pilot is competent to recover from both right and left hand spins and that he is considered proficient to meet the standard of a Commercial Pilot.

.....
Chief Flying Instructor

Note: This course report should be submitted in duplicate.

INSTRUMENT FLYING TRAINING

1. Holders of an appropriate Air Transport Board Licence and Department of Transport Operating Certificate are authorized to provide to the public, courses of instrument flying training which will enable a student to meet the requirements for the granting of:
 - (a) the night endorsement to a pilot licence;
 - (b) a commercial pilot licence; and
 - (c) the instrument flight rating.
2. The following are the minimum qualifications required by pilots engaged in instrument flight instruction for:
 - (a) the night flying endorsement -
 - a valid instructor category with an instrument endorsement;
 - (b) the commercial pilot licence for unlicensed and licensed pilots -
 - a valid instructor category with an instrument endorsement;
 - (c) the commercial pilot licensed pilots only -
 - a valid commercial pilot licence; 500 hours experience as pilot-in-command; a Class I instrument rating (or the Armed Services equivalent); valid for the preceding six month period; and
 - (d) the instrument flight rating -
 - (i) a qualified flying instructor with an instrument endorsement who holds or has held a Class I instrument flight rating within the past three years, or
 - (ii) a qualified flying instructor with an instrument endorsement providing that, prior to application for the test flight for issue of an instrument rating, the candidate is checked and recommended for the test by the holder of a Class I instrument rating valid for the preceding six month period and with at least 500 hours experience as pilot-in-command, or
 - (iii) a valid commercial pilot licence with a Class I instrument rating valid for the preceding six month period and with 500 hours experience as pilot-in-command.
3. The desired instrument flight training may be obtained by the owner (as defined in the Air Regulations) on his aircraft, from a pilot whose qualifications are equal to or better than those specified in paragraph 2 above.
4. Aircraft used for the night flying endorsement training shall be equipped in accordance with Air Navigation Order, Series II, No. 6. Aircraft used for commercial pilot instrument training or the instrument rating training, shall be equipped in accordance with Air Navigation Order, Series II, No. 7.
5. Aircraft used for instrument training must have an effective means of excluding outside visual reference by the trainee pilot, but permit adequate vision for the instructor pilot.

MULTI-ENGINE TRAINING

1. Holders of an appropriate Air Transport Board Licence and Department of Transport Operating Certificate are authorized to provide to the public a course in multi-engine training which will enable a student to meet the requirement for a multi-engine endorsement. The course of training shall be in accordance with the procedures and standards as outlined in Appendix A of this Circular.
2. The following are the minimum qualifications required by pilots engaged in the provision of multi-engine flight instruction to:
 - (a) licensed pilots endorsed for aeroplanes - a valid Commercial type pilot licence endorsed for the type of aeroplane and at least 50 hours of multi-engine experience, with at least 10 hours on the type of aeroplane used.
 - (b) unlicensed pilots and licensed pilots not endorsed for aeroplanes - a Commercial type pilot licence with a valid instructor rating, the holder of which meets the experience requirements in (a) above.
3. The multi-engine training may be obtained by an owner (as defined in the Air Regulations) on his aeroplane from a pilot whose qualifications are equal to or better than those specified in paragraph (2) above.
4. All applicants for a multi-engine endorsement shall undergo a flight test conducted by a Department of Transport examiner.
5. Applicants for a multi-engine flight test shall submit the following Certificate to the Department of Transport examiner. The Certificate shall be completed and signed by the pilot who conducted the final stage of the flight training.

"This is to certify that has completed the multi-engine training course on a aeroplane. A total of hours dual and hours solo has been completed under my supervision and he is considered competent to undergo a multi-engine flight test."

Signed:

Pilot Instructor:

Licence No:

"APPENDIX A"

MULTI-ENGINE TRAINING

PROCEDURES & STANDARDS

The in-flight training for a multi-engine rating shall include instruction in single engine procedures, taxiing, take-off, landings, stalls and all emergency procedures including operational data applicable to the aeroplane used for the flight test.

The following procedures and standards shall be required of applicants for an aeroplane multi-engine endorsement:

1. Operational Knowledge and Equipment

An applicant shall demonstrate his knowledge of the following:

- (i) Aeroplane performance - speeds - etc.
- (ii) Loading
- (iii) Equipment - Hydraulics - Electrical systems
- (iv) Emergency systems
- (v) Fuel systems including the method of fuel transfer
- (vi) Radio equipment
- (vii) C of A - C of R - Log Books - Records

The examiner will refer to the particular aeroplane Flight Manual for the above information.

2. Cockpit Checks and Preparation for Flight

Cockpit checks and preparation for flight shall be performed without hesitation by the applicant and will include the following:

- (i) Exterior Check
- (ii) Engine starting procedures
- (iii) Interior check
- (iv) Engine run-up check
- (v) Pre-take-off check
- (vi) After take-off check
- (vii) Pre-landing check
- (viii) After landing check

While checks can be performed from memory, operators and pilots are encouraged to equip the aeroplanes with and use pre-take-off and pre-landing check lists in accordance with the Information Circular entitled Airmanship.

3. Cockpit Drill Engine Failure During Climb, Cruise or Descent

The procedure outlined below shall apply to all types of aeroplanes:

- (i) Control
- (ii) Power (mixture - pitch - throttles)
- (iii) Drag Check
- (iv) Cause
- (v) Secure

4. Normal Flight Manoeuvres

TAXIING - Applicants shall show good judgement in taxiing and correct use of power for manoeuvring. Excessive use of brakes should not be permitted.

CIRCUIT - Applicants shall complete one normal circuit which will include:

- (i) Take-off
- (ii) Normal Circuit
- (iii) Approach
- (iv) Landing

Take-off should be straight and the applicant shall be familiar with the minimum control speed. Best rate of climb speed shall be maintained throughout the climb. The circuit shall conform to the normal traffic pattern. The approach shall be constant without excessive changes of power. Cockpit checks shall be systematic, speeds for extending landing gear and flaps shall be adhered to and the landing effected in the first third of the landing area.

STALL - Applicants should be capable of executing a full stall, without power, on aeroplanes weighing up to 12,500 lbs. On larger aeroplanes applicants shall demonstrate ability to manoeuvre in the slow flight range. Recovery from stalls shall be made with minimum loss of altitude and change of direction.

5. Emergency Flight Manoeuvres

NOTE: All stalls and single engine procedures shall be executed at a safe altitude.

When practicing single engine procedures, pilots are to avoid cities and thickly populated areas.

If it is considered not advisable to feather a propeller, when practising engine-out procedures, feathering may be simulated by using a power setting that gives zero thrust on the engine.

- (i) ENGINE FAILURE - While flying at the normal cruise configuration the examiner will simulate engine failure of the critical engine. The applicant shall demonstrate the correct drill as previously outlined and establish power settings for continuous flight. On initial engine failure, direction shall be maintained within plus or minus 20° and bank within 10° of roll. Normal engine-out, cruise speed shall be established and the altitude maintained within plus or minus 100 feet if the aeroplane is capable.
- (ii) MANOEUVRING WITH ASYMMETRIC THRUST - Applicant shall prove knowledge of the equipment installed for use in emergency operation of the landing gear. Turns toward and away from the inoperative engine shall be performed. During the manoeuvres the applicant should maintain altitude within plus or minus 100 feet if the aeroplane is capable, but in no case shall the airspeed go below the best rate-of-climb speed in an attempt to maintain altitude. Recovery from turns should be made within plus or minus 10° of an assigned heading.
- (iii) ENGINE FAILURE IMMEDIATELY AFTER TAKE-OFF

NOTE: This procedure to be simulated at an operationally safe altitude. The applicant will be requested to establish a steady climb at best rate of climb speed with full take-off power, landing gear and flaps retracted.

The Examiner will simulate the failure of one engine. The applicant must maintain altitude the direction must be maintained within plus or minus 20° and bank within 10° of roll. The cockpit drill shall be performed in accordance with recommended practices for the aeroplane type.

- (iv) ENGINE FAILURE ON OVERSHOOT PROCEDURE

NOTE: This procedure to be simulated at an operationally safe altitude. The applicant will be requested to establish a simulated approach descent, as for a landing with landing gear and full flap extended and all preparation for the landing completed. A pull-up and overshoot will be requested. The applicant shall first and immediately apply full take-off power. Having applied full take-off power the examiner will simulate failure of one engine. The applicant should perform the drag check without delay. Direction should be maintained within plus or minus 20° and bank within 10° of roll. Altitude should be maintained and the airspeed shall remain above the minimum single engine control speed. The cockpit drill shall be performed in accordance with recommended practices for the aeroplane type.

- (v) ACTION IN EVENT OF ENGINE FIRE - Applicants shall be thoroughly familiar with the engine shut down procedure in the event of fire.

Applicants will be requested to demonstrate the correct fire drill for the aeroplane type. Feathering of the propeller may be simulated by selecting zero thrust for the demonstration.

Applicants shall show ability to maintain direction and the altitude shall be maintained within plus or minus 100 feet if the aeroplane is capable.

- (vi) APPROACH AND LANDING WITH ASYMMETRIC THRUST - The applicant must complete one approach and landing under conditions which simulate the complete failure of the critical engine. Feathering of the propeller may be simulated by selecting zero thrust.

The applicant must complete all emergency checks and during the approach maintain at least single engine minimum control speed. Flaps, if used, should not be extended until a definite decision to land has been made.

A long drag-in approach should not be permitted.

- (vii) CENTRE-LINE THRUST AIRCRAFT - The foregoing manoeuvres, where applicable, may be performed on centre-line thrust aircraft, but in such cases, the multi-engine endorsement will be restricted to centre-line thrust aircraft only.

ALTERNATE ENDORSEMENT OF LANDPLANE OR
SEAPLANE AUTHORITY ON A PILOT LICENCE

1. 1. Alternate endorsements to pilot licences for seaplane or landplane operation will be made only when the following minimum conversion training has been completed.

Seaplane

Five hours of conversion training including:

- (i) three hours dual instruction, and
- (ii) five take-offs and landings as sole occupant of the aeroplane.

The following exercises shall be included in the conversion training:

Taxiing	Take-offs
Sailing	Landings
Docking	

Experience on glassy water, rough water as well as in crosswind conditions is recommended.

Landplane

Three hours of conversion training including:

- (i) two hours dual instruction, and
- (ii) five take-offs and landings as sole occupant of the aeroplane.

The following exercises shall be included in the conversion training.

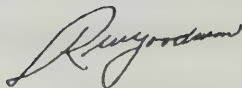
Taxiing	Take-offs
Landings, including crosswind landings	

2. 2. The conversion training may be provided by the holder of a commercial, senior commercial or airline transport pilot licence endorsed for the aircraft being used in the conversion training, providing such holder has acquired at least 50 hours as pilot-in-command of seaplanes, or of landplanes, as the case may be.

3. On completion of the conversion training and prior to the endorsement of the licence, the following certificate shall be submitted to the Regional Superintendent, Air Regulations. The pilot's certified log book shall reflect the training covered by the certificate.

"This is to certify that has completed a conversion course to seaplanes landplanes. A total of hours of in-flight (dual) training and solo including a minimum of 5 take-offs and landings as sole occupant of the aircraft, has been completed under my supervision and he is considered competent. It is recommended that pilot licence No. be endorsed accordingly."

Signed
Licence No.



(R. W. Goodwin),
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
Publications
AERODROMES

0/12/67
1st December

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 2

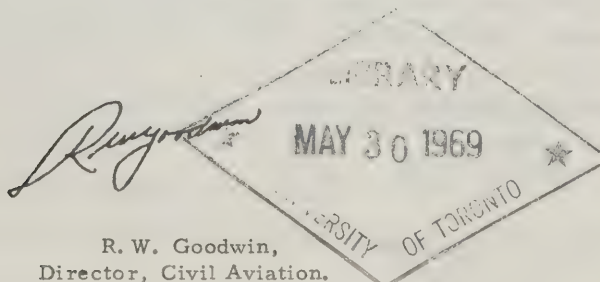
Touchdown and Centreline Lighting Toronto International Airport Runway 05R

It is expected that the first installation of touchdown zone, centreline and exit taxiway lighting will be in operation on Runway 05R at Toronto International Airport on or about December 15th, 1967. These lights, which are in addition to the standard high intensity runway and approach lights, will constitute an essential component of ground facilities necessary for implementation of Category II operations. Also, they will provide improved visual guidance for present operations in low visibility conditions. Work is proceeding with the installation and improvement of other essential components of a complete Category II system. Runway 05R should be ready for commissioning for Category II operations by the Fall of 1968.

The touchdown zone, centreline and exit taxiway lights are installed as illustrated in the diagram on the reverse side.

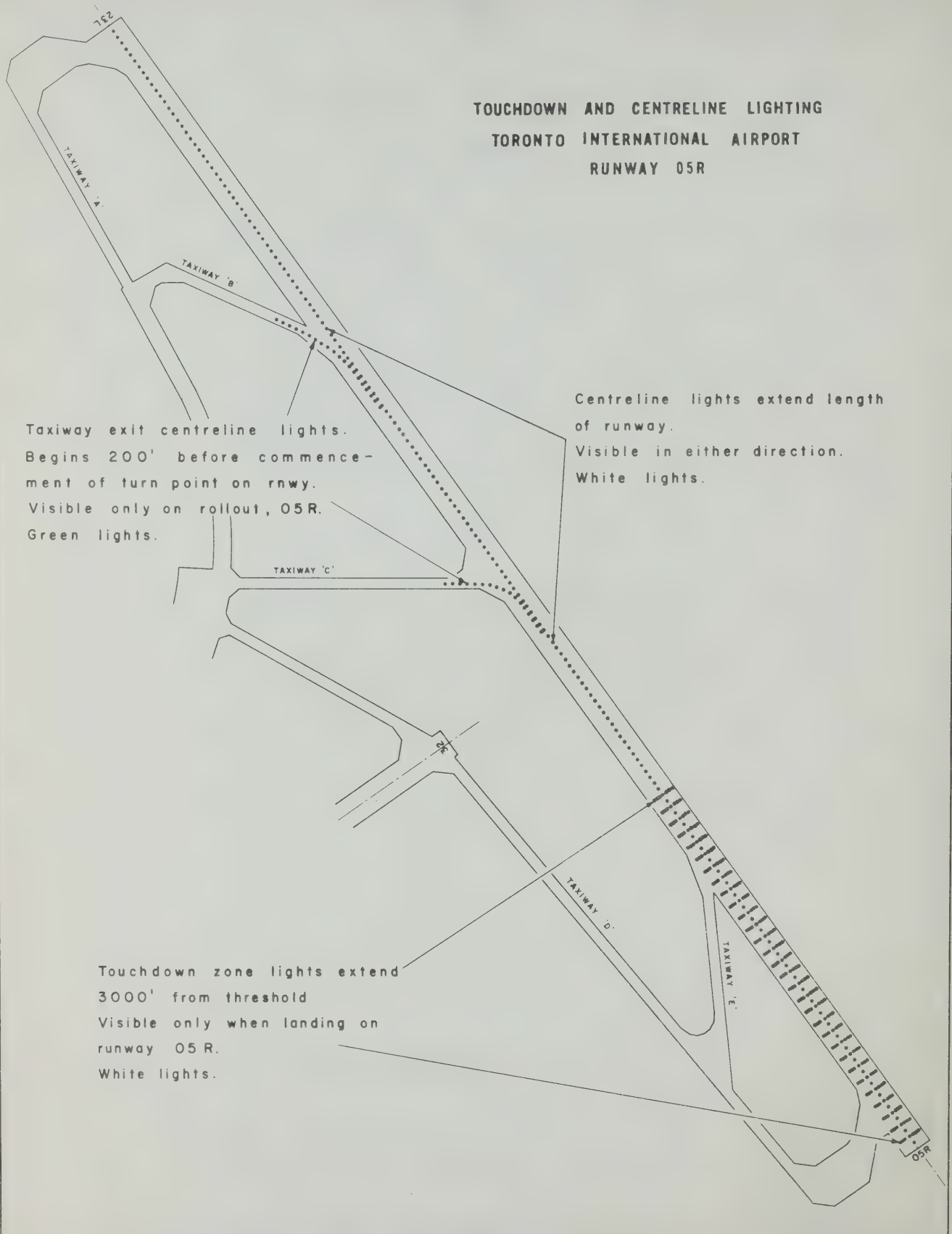
The light output of the touchdown zone and centreline lights can be varied from the control tower by selection of one of the five settings available. The exit taxiway lights will be the same intensity as the centreline lights however, the taxiway lights will not be as bright because green filters have been installed for exit identification. In view of the various intensities available and the importance of a correct relationship between intensities in one component of the system to another, for example, the relationship of the light intensity in the approach system and the touchdown zone lights, it is proposed, pending further studies, to regulate the light output in accordance with present practice relevant to the high intensity approach lighting system, e. g. high intensity setting only for day fog and a much lower setting for good visibility at night. Intermediate settings would depend on the ambient light and visibility.

It is proposed to operate the above mentioned systems for a period of evaluation and familiarization as soon as the installation is complete. Comments regarding their operation and/or effectiveness would be appreciated. Such comments may be directed to the Director, Civil Aviation Branch, Department of Transport, Ottawa, Ontario.



R. W. Goodwin,
Director, Civil Aviation.

TOUCHDOWN AND CENTRELINE LIGHTING
TORONTO INTERNATIONAL AIRPORT
RUNWAY 05R



INFORMATION CIRCULAR



Summary

0/1/68
1st January

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

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AERODROMES

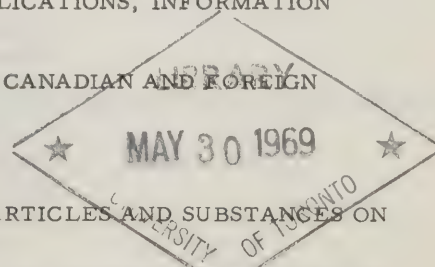
0/14/65	SECTION 1	LAND, WATER, ICE AND HELIPORTS Definitions Private Buoy Regulations Physical Characteristics of Aerodromes Visual Ground Aids (Day) Visual Ground Aids (Night) Use of Airport Lighting Equipment Runway numbering Visual Approach Slope Indicator (VASI) (Amended by 0/22/66) Heliports
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AIRCRAFT GENERAL

0/22/64	CARRIAGE OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES AND SUBSTANCES ON BOARD AIRCRAFT
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0/5/65

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- SECTION 1 EQUIPMENT
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R. W. Goodwin,
Director, Civil Aviation.

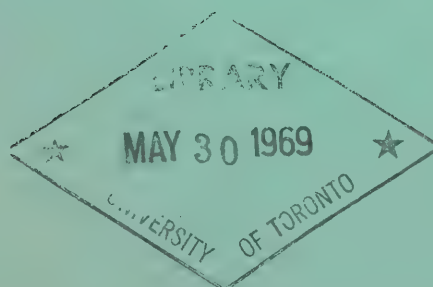


0-2-68



INFORMATION CIRCULAR

**MEDICAL
EXAMINERS**



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Medical

0/2/68
15th January

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

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MEDICAL EXAMINERS (Superseded 0/25/66)

Candidates for civil aviation licences requiring medical examinations may present themselves to any of the physicians listed hereunder, who have been appointed by the Department of Transport and are familiar with the procedures to be followed. The report of the medical examination will be forwarded to the appropriate Regional Office.

If any question should arise regarding the medical examination or the interpretation of the medical requirements, the candidate may forward his enquiry direct to the Regional Director, Air Services, for the Region concerned:

Moncton Region	- P. O. Box 42, Moncton, N. B.
Montreal Region	- Regional Administration Bldg., Montreal International Airport, Dorval, P. Q.
Toronto Region	- P. O. Box 7, Toronto Dominion Centre, King Street West, Toronto 1, Ontario.
Winnipeg Region	- Winnipeg General Post Office, Winnipeg 1, Manitoba.
Edmonton Region	- 9820 - 107th Street, Edmonton, Alberta.
Vancouver Region	- 739 West Hastings Street, Vancouver 1, B. C.

- MONCTON REGION -

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>NEWFOUNDLAND</u>		
Corner Brook	Cant, D.	Medical Centre
Gander	Coxon, M. G.	Paton Memorial Hospital
Happy Valley, Labrador	Tsang, H. C.	Paddon Memorial Hospital
	Tuton, I.	Paddon Memorial Hospital
Labrador City	Miller, R. H.	P. O. Box 1699
	Paradis, M.	Cpt. William Jackman Hospital
Placentia	Ross, J. M.	Cottage Hospital
St. Anthony	Thomas, G. W.	Int. Grenfell Association
St. John's	Coyle, J. V.	221 New Gower St.
	Roberts, H. D.	Roberts Bldg., 95 Le Marchant Rd.
	Russell, G. F.	325 Hamilton Ave.
	Smith, J. T.	37A Forest Rd.

PRINCE EDWARD ISLAND

CENTRE	MEDICAL EXAMINER	ADDRESS
Charlottetown	Roberts, A. L.	170 Fitzroy St.
Summerside	Cameron, S. R.	5 Central St.

NOVA SCOTIA

Amherst	Christie, H. E.	Medical Arts Bldg., 107 Church St.
	Coates, W. O.	72 Church St.
Digby	Lewis, D. E.	Warwick St.
Elmsdale	Wright, R. G.	.....
Halifax	Crosby, A. B.	5880 Spring Garden Rd.
	Thorne, E. L.	2198 Gottingen St.
Kentville	Kirkpatrick, D. H.	150 Park St.
Liverpool	Bird, S. B.	Main St.
New Glasgow	MacLean, W. D.	20 Abercrombie Rd.
Sydney	MacLellan, C. L.	Bishop Block, Charlotte St.
Truro	MacKenzie, S. G. Jr.	36 Logan St.
Windsor	Kryszek, S. H.	Wiley St.
Yarmouth	MacDonald, D. F.	305 Main St.

NEW BRUNSWICK

Bath	Lockhart, J. A.	.....
Bathurst	Eddie, E. S.	215 Main St.
Chipman	Burley, M. P.	.....
Edmundston	Harrigan, J. F.	2 Hill St.
Fredericton	Jewett, B. L.	96 Parliament Sq.
	Lythgoe, C. V.	206 Rockwood Ave.
Moncton	Brown, R. J.	CNR Medical Dept.
	Cormier, E.	186 Botsford St.
	Delaney, J. A.	78 Botsford St.
	Doyle, C. E.	380 St. George St.
Saint John	Cheesman, F. J.	239 Princess St.
	Morgan, L. I.	Medical Arts Bldg., 115 Hazen St.
St. Stephen	Brownrigg, L. W.	.....
Woodstock	Kee, C. G.	126 Elm St.

- MONTREAL REGION -

QUEBEC

Amos	Berube, R.	266-1st Ave.
Baie Comeau	Digaspari, J.	55 Champlain
	Thurber, D. S.	Boisvert Memorial Hospital
Bolduc	Begin, Michel	St. Martin, Beauce
Chapais	Pelletier, F. E.	P. O. Box 910
Chicoutimi	Genest, L. E.	1096 Notre-Dame St.
	Lachance, J. C.	88 Saint-Jean-Baptiste Blvd., Riviere-du-Moulin
Cowansville	Mooney, M. C.	151 Main St.
Drummondville	Dufresne, I.	528 St. Jean St.
Fort Coulonge	Laycock, H. E.	P. O. Box 160

- MONTREAL REGION -

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>QUEBEC</u> (Cont'd)		
Frobisher Bay	Medical Officer-in-Charge	Medical services
Gagnon	Harvey, G. H.	13, 13th St.
Gaspe	Fortier, G.	.....
Granby	Lecoq, P.	118 Denison St.
Grand'Mere	Brunet, J. A. D.	310-6th Ave.
Hull	Barrette, M.	31 Montcalm St.
Iberville	Pare, H. R. J.	26-2nd Ave.
Joliette	Boyer, C.	713 Manseau Blvd.
Kenogami	Laliberte, L. A.	.....
La Tuque	Michaud, L.	565 Commerciale.
Laval West	Maisonneuve, J. H. J. O.	2630-30th Ave.
Longueuil	Duchesne, G.	140 Ave. de Touraine
Matagami	Landry, R.	10 Petite Allee
Matane	Ahier, A.	227 St. Jerome
Mont Joli	Lepage, R. A.	C. P. 490
Mont-Laurier	Reid, G.	.....
Montmagny	Prevost, J. A. R.	88 St. Thomas
Montreal	Beaupre, J. E. J.	Air Canada Medical Dept.
	Boyle, E. S.	CPR - Windsor Station
	Dagenais-Perusse, P.	301 St. Louis Sq.
	Gibeault, H.	4135 Papineau St.
	McKim, L. H.	1002 MacGregor Ave., Apt. 203.
	Pare, J. A. P.	4500 Sherbrooke St. W.
	Ruddick, D. W.	2015 Crescent St.
	Ruddick, W. W.	2015 Crescent St.
	Shortt, C. D.	CNR-935 Lagauchetiere St. W.
	Thom, A. T.	4492 Sherbrooke St. W.
	Vaughan, P.	CNR-935 Lagauchetiere St. W.
	Vineberg, A. M.	Royal Victoria Hospital
	Violette, B. R. J.	Medical Clinic, Air Canada Bldg., Montreal Int. Airport
		CPR-Windsor Station.
	Wight, G. E.	P. O. Box 430.
Noranda	McArthur, J. E.	238 St. Johns Rd.
Pointe Claire	Genender, L. J.	238 St. Johns Rd.
	Hay, J.	241 Lakeview Ave.
	Moore, F. C.	P. O. Box 304.
Port Alfred	Beaulieu, E.	.....
Price	Joubert, G. A.	30 Des Jardins
Quebec	Delaney, W. L.	220 Grande Allee(E)
	Dunne, R. F.	34 rue de la Fabrique
	LaRochelle, J. L.	500 Lafontaine St.
Riviere du Loup	Godbout, Y.	.....
Roberval	Thibault, P.	8 McQuaig St. E.
Rouyn	Racine, P. A.	Windsor Medical & Emergency Clinic, 4505 Sources Rd.
Roxboro	Harrold, A. J.	(Roberval Co.)
		805 Sainte Anne St.
St. Felicien	Banville, R.	237 Longueuil St.
St. Hyacinthe	Perrault, M.	
St. Jean	Robert, T.	

- MONTREAL REGION -

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>QUEBEC (Cont'd)</u>		
St. Jerome	Leonard, C.	298 Labelle St.
St. Jovite	Dupre, R. N.	Terrebonne St.
St. Michel des Saints	Gauthier, G.	453 Brassard
Schefferville	Gelinas, M.	C. P. 1448
Seven Islands	Drouin, J.	700 Laure
	Laflamme, L. E.	700 Laure
Shawville	Potvin, E. J.	P. O. Box 569
Sherbrooke	Gladu, M.	166 King St. W.
	McMahon, P.	166 King St. W.
Sorel	Tremblay, J. M.	P. O. Box 308
Three Rivers	Boucher, C.	5181 Notre Dame St.
	Marchand, M. A.	1005 St. Prosper
Val D'Or	Kingston, P. T.	768-3rd Ave.
Verdun	Landry, H. J.	5170 Verdun Ave.

- TORONTO REGION -

<u>ONTARIO</u>		
Agincourt	Hood, D. C.	6 Glenwatford Drive
Almonte	King, J. K.	118 Water St.
Bancroft	Lehinant, V. W. A.	P. O. Box 220
Barrie	Seymour, G. C.	Seymour Medical Group, 121 Wellington St. W.
		225 East Bridge St.
Belleville	Horne, S. D.	Christilaw Block
Blind River	McCendie, R. G.	55 Avondale Blvd.
Bramalea	Neeson, G. B.	172 Queen St. W.
Brampton	Freed, B. D.	Ave. Medical Centre,
Brantford	Carson, J. H.	221 Brant Ave.
	Riddell, A. D.	Ave. Medical Centre, 221 Brant Ave.
		11 Victoria Ave.
Brockville	Code, T. G.	13 Garden St.
	Loughrey, R. S.	.....
Chapleau	Young, G. E.	.....
Chatham	Palanek, F. G.	147 Thames St.
Chatsworth	Chamberlain, G. E.	.....
Cobourg	Blackwell, F. N.	68 King St. E.
Cooksville	Weir, J. A.	21 Upper Middle Rd.
Cornwall	Caldwell, L. A.	328 Second St. W.
Don Mills	Maxmen, M. D.	4 Parmbelle Crescent
Downsview	Birenbaum, S.	3042 Keele St.
Dresden	Gibbs, P. L.	.....
Dryden	(see Winnipeg Region)	
Dunnville	Mills, W. C. B.	Medical Centre
Elliot Lake	Stewart, C.	134 Spruce St.
Espanola	Robitaille, N.	Espanola Clinic
Exeter	Ecker, D. A.	.....
Fort Erie	Whiting, M. L.	214 Jarvis St.
Fort Frances	(see Winnipeg Region)	
Fort William	(see Winnipeg Region)	
Galt	Wright, W. F.	16 George St. N.

TORONTO REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>ONTARIO (Cont'd)</u>		
Gananoque	Jenkins, J. G.	.....
Geraldton	Malcolm, A. H. H.	P. O. Box 610
Goderich	Wallace, J. W.	Colborne St.
Gravenhurst	Goodwin, J. G.	260 Muskoka St.
Guelph	MacRae, A. I.	222 Eramosa Rd.
	Scott, W. A.	115 Woolwich St.
Haileybury	Arnold, W. C.	.....
Haliburton	Carroll, L. H.	P. O. Box 300
	Good, H. E.	P. O. Box 120
Hamilton	Fawcett, J. P.	206 Main St. W.
	McAlister, H. R.	406 Medical Arts Bldg.
	Tice, J. W.	516 Medical Arts Bldg.
Huntsville	Jones, J. D.	16 Main St. W.
Kakabeka Falls	(see Winnipeg Region)	
Kapuskasing	Latimer, J. W.	Kapuskasing Medical Centre
Kenora	(see Winnipeg Region)	
Kingston	Amodeo, W.	229 Brock St.
	Binhammer, H. E. W.	Reddendale Medical Centre
		Lakeview Ave.
Kingsville	Jenner, L. C.	P. O. Box 1000
Kirkland Lake	Brebner, C. N.	11 Kirkland St.
Kitchener	Demary, R.	751 King St. W.
	McMurchy, N. R.	215 Frederick St.
	Wilson, C. S.	159 Frederick St.
Leamington	Brewer, L. M.	9 Talbot St. E.
Lindsay	Davies, H. R.	87 Adelaide St. N.
	Lindsay, J. E. G.	87 Adelaide St. N.
Listowel	Munn, William D.	Wallace St. N.
London	Fisher, C. F. S.	290 Huron St.
	Sills, H. R.	751 Hamilton Rd.
	Spurgeon, C. H.	570 Waterloo St.
Malton	Carroll, J. R.	Air Canada Medical Clinic
	Korentager, H.	Malton Medical Centre,
		Airport Road
Midland	Cardwell, R. J.	279 King St.
Moose Factory	Superintendent	Moose Factory Hospital
Mount Dennis	Jackson, G. S.	3533 Eglinton Ave. W.
Niagara Falls	Whytock, A. B.	701 St. Clair Ave.
North Bay	Wall, C. B.	1221 Algonquin Ave.
	Wallace, G. M.	333 Ferguson St.
Oakville	Hunt, N. E.	Suite 10, Medical Arts Bldg.
		358 Reynolds St.
Orangeville	Hill, George U.	33 - 1st Street
Orillia	Richardson, D. A.	40 Coldwater St. E.
Oshawa	McIlveen, C. E.	152 Simcoe St. N.
	Morris, M. L.	118 Simcoe St. N.
	Spragge, J. W.	118 Simcoe St. N.
	Caldwell, J. D.	1105 Carling Ave.
Ottawa	Feller, J.	267 O'Connor St.
	Gamble, D. E.	2285 Carling Ave.
	Lidington, E. W.	151 Holmwood Ave.
	Wood, E. H.	151 Metcalfe St.

TORONTO REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>ONTARIO (Cont'd)</u>		
Parry Sound	MacKay, J. P.	75 James St.
Pembroke	Cashman, T. L.	177 Alexander St.
Peterborough	Clark, J. R.	291 Charlotte St.
	Epping, J. R.	707 Charlotte St.
	Neville, J.	397 Reid St.
Picton	Caughey, G. C.	43 King St.
	Hart, S. W. D.	.....
Port Colborne	Wilson, J. C. S.	176 Catharine St.
Red Lake	(see Winnipeg Region)	
Richmond Hill	Cowan, W. C.	4 Church St. S.
Ridgeway	Legris, A. J.	403 Main St.
St. Catharines	Johnston, K. M.	138 Geneva St.
	Salton, William	64 Queen St.
	Sparrow, G. R.	168 Ontario St.
St. Thomas	Graham, C. A.	130 Ross St.
Sarnia	Brown, H. M.	350 Wellington St.
	Carruthers, N. C.	876 London Rd.
	MacKinlay, A. K.	350 Wellington St.
Sault Ste. Marie	Alexandre, L. E.	248 Queen St. E.
	Sullivan, W. E.	8 Albert St. E.
Scarborough	Cromby, J. W.	605 McCowan Rd.
	Haw, B. G.	1 Alvinston Rd.
	McMillen, G. R.	546 Pharmacy Ave.
Simcoe	Jenkins, J. C.	5 Brook St.
Sioux Lookout	(see Winnipeg Region)	
Smiths Falls	Hogan, J. J.	85 Brockville St.
South Porcupine	Johnston, D.	74 Golden Ave.
Stayner	McLean, W. S.	Main St.
Stouffville	Smith, D. H.	P. O. Box 1089
Stratford	Bissonnette, Robert N.	117 Waterloo St. S.
	Gemmell, D.	95 S. Waterloo St.
	Evans, C. C.	70 Cedar St.
Sudbury	McCullough, J. F.	260 Cedar St.
	Myatt, D. G.	260 Cedar St.
Sutton West	Noble, C. S.	.....
Tillsonburg	Ferrie, A. S.	40 Harvey St.
	Lee, C. C.	40 London St.
Timmins	McClinton, J. B.	46 Pine St. S.
Toronto	Burke, C. L.	909 Royal York Rd.
	Callahan, G. A.	215 Victoria St.
	Denne, A. J.	111 Queen St. E.
	Fine, H.	99 Avenue Rd.
	Gracie, J. P.	1050 Avenue Rd.
	Hale, C. L. G.	86 Bloor St. W.
	Hall, F. Murray	95 St. Clair Avenue, W.
	Hubbs, D. H.	216 St. Clair Avenue, W.
	McGuigan, J. P.	CNR Medical Clinic,
		151 Front St.
	McRae, C. A.	230 Russell Hill Rd.
	Miller, J. H.	270 Runnymede Rd.
	Nicholls, G. W.	111 Queen St. E., Suite 303
	Noble, E. C.	216 St. Clair Ave. W.
	Pretty, G. C.	CNR Medical Clinic,
		151 Front St.
	Sharp, F. B.	86 Bloor St. W., Suite 760

TORONTO REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>ONTARIO (Cont'd)</u>		
Trenton	Bailey, W. S.	24 Catherine St.
	Dow, E. W.	18 Crown St.
Tweed	Allen, A. G.	100 Victoria St.
Wallaceburg	Lamont, T. W.	305 Nelson St.
Wawa	Timpson, R. J.	96 Broadway Ave.
Willowdale	Rein, A.	30 Sheppard Ave. E.
Windsor	Dignan, J. G.	4675 Tecumseh Blvd., E.
	Foster, K. H.	636 Kildare Rd.
	Zade, K. J.	1466 Ouellette Ave.,
Woodstock	Webb, G. A. C.	360 Devonshire Ave.

- WINNIPEG REGION -

ONTARIO

Dryden	Daniel, E.	The Dingwall Medical Group
	Robinson, W. G.	P. O. Box 1090
Fort Frances	Boyle, W. G.	301 Victoria Ave.
Fort William	McIntosh, J. D.	302 S. Syndicate Ave.
	Park, R. J. G.	Ridgeway Clinic,
		1001 Ridgeway St.
	Scrimgeour, J. W. F.	The Spence Clinic,
		910 Ridgeway St.
Kakabeka Falls	Lower, A. H.	.....
Kenora	Burris, S. M.	203 First St. S.
	Leckie, G. B.	112 Matheson St. S.
Red Lake	Gloster, M. E.	Red Lake Medical Group
Sioux Lookout	Allen, H. W.	64B Front St.

MANITOBA

Brandon	Evans, H. S.	Brandon Clinic
	Matheson, J. M.	Brandon Clinic
	Myers, R. F. M.	Brandon Clinic
	Rose, L. C.	Western Medical Clinic,
		111-9th St.
Carman	North, H. W. C.	59 Villiard Ave.
Dauphin	Stephen, L. J.	31-3rd Ave. N. E.
Flin Flon	Johnson, P.	Flin Flon Clinic
	Premachuk, P. G.	Flin Flon Clinic
Fort Churchill	Medical Officer-in-Charge	Churchill Medical Clinic
Gimli	Scribner, C. R.	P. O. Box 971
Killarney	Dow, G. E.	Killarney Medical Centre
Lynn Lake	Lazarus, S. S.	Sherritt Gordon Mine Hosp.
	Perry, J. R.	.....
Morden	Colert, W. M.	.....
Neepawa	Domegan, P. R.	.....
Pinawa	Beaumont, H. W.	.....

WINNIPEG REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>MANITOBA (Cont'd)</u>		
Portage la Prairie	Rennie, J. C.	41 Royal Rd. N.
Russell	Thomas, C. M.	Remey Bldg.
Selkirk	Lange, H. N.	.....
Steinbach	Reid, W. S.	353 Eveline St.
Swan River	Rozecki, W. A.	P. O. Box 430
The Pas	Choate, J. F.	Steinbach Medical Clinic
Thompson	Malcolm, T. F.	.....
Treherne	Rolfe, H. C.	Associated Medical Clinic,
Virden	Johnston, J. B.	320 Fischer Ave.
Winnipeg	Woods, M. L.	Medical Division, Inter. Nickel
	Harris, R. S.	Co. of Canada.
	Beckstead, J. L.	P. O. Box 190.
	Dwyer, E.	.....
	Eggertson, S. H. O.	407 Medical Arts Bldg.
	George, J. P.	CNR Medical Clinic,
	Gorrie, W. A.	373 C. N. Station.
	Holland, T. E.	CNR Medical Clinic,
	Ludwig, J. A.	373 C. N. Station.
	McIntyre, D. N. C.	227 Academy Rd.
	McKinna, C.	C. N. R. Depot
	Newman, W. G.	632 Medical Arts Bldg.
	O'Toole, J. W.	313 Boyd Bldg.
	Pincock, J. G.	332 Medical Arts Bldg.
	Shnider, M.	633 Lodge Ave., (St. James)
		101 Medical Arts Bldg.
		Assiniboine Clinic,
		Booth & Lodge (St. James)
		501 Churchill Dr.
		Room 101-1151 Pembina Hwy,
		(Fort Garry)

SASKATCHEWAN

Arcola	Plaster, E. L.	.....
Assiniboia	Robertson, K. A.	.....
Biggar	Rayman, M. R.	Main Street.
Estevan	Bastian, F. O.	c/o Estevan Medical Assoc.
Indian Head	Inglis, R.	1239 - 4th St.
Kamsack	Davies, A. J.	.....
Kindersley	Dutton, P. W.	219-1st St.
La Ronge	Mallow, W. E.	Harvey Block
Maple Creek	Penner, L. U.	107-2nd Ave. E.
Meadow Lake	Bradley, R.	Hospital Bldg.
Melfort	Smith, H. G.	Maple Creek Clinic.
Melville	Martine, R. J.	Meadow Lake Clinic.
Moose Jaw	Lavoie, L. A.	Associate Medical Clinic.
Nipawin	Brennan, F. J.	.....
	McIntyre, H. R.	108 Scott Block
	Morris, F. R.	200 Scott Block
	Fitton, H.	.....

WINNIPEG REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>SASKATCHEWAN (Cont'd)</u>		
North Battleford	Acheson, H. F.	1132-100 St.
Oxbow	Gonor, A. B.	1332-100th St. N.
Prince Albert	Galloway, G. D.	.....
	Finlayson, C. M.	304 Canada Bldg.
	Powles, G. P. S.	201-219 Medical Bldg.
Regina	Bradley, G. C.	350 Medical & Dental Bldg.
	MacDougall, W. G.	812 Medical & Dental Bldg.
	Smith, N. H.	Medical Arts Clinic, 2125-11th Ave.
	Thom, I. M.	Medical Arts Clinic, 2125-11th Ave.
Rosetown	Giles, C. R.	The Rosetown Medical Group
Saskatoon	Duggleby, H. E.	102-217 Third Ave. N.
	Leckie, G. G.	810 Canada Bldg.
	Mann, J. A.	612 Medical Arts Bldg.
Shaunavon	Adamson, J. W.	The Clinic
Swift Current	Irwin, R. W.	129 Central Ave.
	Keene, J. D.	212 Burrows Block
Unity	Doyle, W. J.	Unity Medical Associates
Uranium City	(see Edmonton Region)	
Watrous	Heseltine, J. R.	Watrous Medical Clinic
Weyburn	Eaglesham, F.	110 Third St. N.
Wynyard	Polec, E. M.	.....
Yorkton	MacIntyre, J. A.	4 Carnduff Bldg.

- EDMONTON REGION -

ALBERTA

Athabasca	Brown, J. M.	P. O. Box 1080
Banff	Costigan, P. G.	Medical Clinic
Barrhead	Keir, W. R.	P. O. Box 439
Bonnyville	Bugeaud, J. P.	.....
Brooks	Reynar, J. A.	.....
Calgary	Chandler, C. R.	Suite 31, Academy Med. Bldg., 1812 - 4th St. S. W.
	Chisholm, W. M.	Suite 41, Academy Med. Bldg., 1812 - 4th St. S. W.
	Ferguson, I. A.	Suite 64, Academy Med. Bldg., 1812 - 4th St. S. W.
	Lam, A. K. S.	122A - 16th Ave. N. E.
	McKercher, L. A.	Suite 31, Academy Med. Bldg., 1812 4th St. S. W.
	McLean, W. N. A.	Suite 600, Chinook Prof. Bldg., 6147 MacLeod Trail S. W.
	Mitchell, M. D.	115 Medical Arts Bldg.
	Mulloy, W. H.	2940 - 17th Ave. W.
	Selby, R. C.	Suite 43, Academy Med. Bldg., 1812 - 4th St. S. W.
	Vogel, M. J.	Northwest Professional Centre, 1640 - 16th Ave. N. W.
	Walker, W. T.	212 Rideau Medical Bldg.

- EDMONTON REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>ALBERTA (Cont'd)</u>		
Camrose	MacInnis, F.H.	Smith Clinic
Cardston	Larson, B.J.	.....
Castor	Foster, C.E.	.....
Claresholm	Cornish, S.J.	P.O. Box 8
Drayton Valley	Waugh, I.G.	.....
Edmonton	Brand, H.M.	735 Professional Bldg.
	Hall, A.S.	14607 MacKenzie Dr.
	Hebb, H.D.	219 Professional Bldg.
	Jespersen, R.E.	10155 - 120th St.
	Links, H.	10951 - 124th St.
	Mather, C.E.	20th Floor, C.N. Tower
	McAllister, N.J.	7510 - 101 Ave.
	Mirlin, W.	Associate Medical Clinic, Medical Centre, 25 St. Michael St. (St. Albert)
	Riddle, W.J.	10155 - 120th St.
	Taylor, R.F.	Room 118, University of Alberta Hospital
	Watts, A.R.	University Hospital
	Young, M.K.	10004 - 105th St.
Edson	Crawford, J.E.	P.O. Box 1690
Empress	Fraser, J.M.	.....
Fairview	Garrison, T.W.	.....
Fort McLeod	Walker, T.J.	.....
Fort McMurray	Yung, S.W.K.	St. Gabriel Hospital
Grande Prairie	Dobson, H.L.	10102 - 101 St.
High Prairie	Lewis, R.D.M.	High Prairie Clinic
High River	Blayney, Y.	.....
Jasper	Betkowski, J.P.A.	.....
Leduc	Kempton, A.R.	P.O. Box 458
Lethbridge	Balfour, G.S.	430 Mayor Magrath Dr.
	Bigelow, J.K.	1605-9th Ave. S., Fowler Clinic
	Rice, D.A.	c/o Roy Clinic, 715-2nd Ave. S.
	Skene, J.S.	Lloydminster Clinic
Lloydminster	Fish, H.W.	P.O. Box 119
McLennan	Skinner, E.G.F.	Medical Arts Clinic, 51 - 6th St. S.E.
Medicine Hat		P.O. Box 910
		P.O. Box 550
Olds	Wray, R.G.	.....
Peace River	Douchet, G.L.	.....
Pincher Creek	Hodgson, M.R.	.....
Ponoka	Weaver, S.A.	.....
Provost	Acton, W.C.	Provost Medical Centre
Red Deer	Chadwick, R.M.	Associate Clinic
	Weddell, J.A.	Parsons Clinic, 4826 Ross St.
	Law, F.M.	.....
Spirit River	Malcolm, J.M.	The Medical Centre
Stettler	Wilson, E.M.	P.O. Box 219
St. Paul	Haigh, G.	P.O. Box 128
Three Hills	Sharpe, J.	.....
Uranium City		

EDMONTON REGION (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>ALBERTA (Cont'd)</u>		
Vegreville	Kuzyk, N. J.	5006 - 51 Ave.
Vermilion	Ryan, P. J. M.	5032 - 49th Ave.
Wainwright	Evans, C. E.	P. O. Box 1060
Westlock	Whissell, G.	.....
Wetaskiwin	Dykes, R. M.	P. O. Box 9
	Johnson, L. E.	.....
Whitecourt	Hayhurst, R. J.	Medical Surgical Clinic

BRITISH COLUMBIA

Dawson Creek	Watson, A. B.	10504 - 10th St.
Fort Nelson	Metten, A. D.	Fort Nelson Medical Clinic
Fort St. John	Temple, J. J.	The Medical Clinic
	Erickson, L. M.	.....

NORTHWEST TERRITORIES

Fort Rae	Medical Officer-in-Charge	Medical Services
Fort Simpson	Medical Officer-in-Charge	Medical Services
Fort Smith	Under care of Powell, L. G.	Yellowknife
Hay River	Covert, E. L.	P. O. Box 126
Inuvik	Medical Officer-in-Charge	Medical Services
Yellowknife	Powell, L. G.	P. O. Box 10

YUKON TERRITORY

Watson Lake	Wigby, S. B.	P. O. Box 327
Whitehorse	Doran, M. L.	P. O. Box 2058
	Tanner, A. C.	P. O. Box 2054

- VANCOUVER REGION -

BRITISH COLUMBIA

Abbotsford	Woods, J. H.	.....
Alert Bay	Pickup, H. J.	.....
Bella Coola	Chisholm, J. I.	Bella Coola General Hosp.
Burns Lake	Battersby, G. S.	.....
Campbell River	Graham, J. M.	Campbell River Plaza
Castlegar	Hall, J. V. G.	15 Pine St.
Chilliwack	Gibson, G. J.	208 Mary St.
Courtenay	Theal, G. I.	588 England Ave.
Cranbrook	Mugan, J. McK.	P. O. Box 69
Creston	Miller, J. S.	P. O. Box 670
Dawson Creek	(see Edmonton Region)	
Duncan	Smith, D. M.	.....
	Wilson, R. R.	.....
Fort Nelson	(see Edmonton Region)	
Fort St. John	(see Edmonton Region)	
Grand Forks	Perley, D. A.	.....
Haney	Thordarson, T. T.	22707 Lougheed Hwy.
Hope	Morrison, R. D.	P. O. Box 1088
Invermere	Duthie, G. A.	.....

- VANCOUVER REGION - (Cont'd)

CENTRE	MEDICAL EXAMINER	ADDRESS
<u>BRITISH COLUMBIA (Cont'd)</u>		
Kamloops	MacKay, B. K. Thomson, J. A. C. Tomm, G. E.	Irving Clinic 242 Victoria St. 384 Tranquille Rd. (North Kamloops) 1635 Abbott St. 1635 Abbott St. P. O. Box 1239 P. O. Box 820 20721 Frazer Hwy. 20571 Douglas Crescent P. O. Box 998 Mica Medical Clinic 340 Campbell St. Medical Assoc. Clinic 300 Westminster Bldg. 13665 - 107A Ave. P. O. Box 820 P. O. Box 608 125 W. Nanaimo Ave. 216 Argyle St. Medical Clinic, 4794A Joyce Ave. Medical Clinic, 4794A Joyce Ave. 214-1320 Fifth Ave. 1320-5th Ave. 153-3rd Ave. W. The Avery Clinic P. O. Box 129 814 Cook Rd. 812 Cook Rd. P. O. Box 730 P. O. Box 370 P. O. Box 670 P. O. Box 1150 901 Helena St. 5780 Cambia St. 736 Granville St. 812-750 W. Broadway 925 W. Georgia St. 425-2184 W. Broadway 1645 Commercial Dr. Room 204, CNR Station 809 W. 41st Ave., Ste. 230 Ste. 1309, 750 W. Broadway 310-5780 Cambie St. 8584 Granville St. 925 W. Georgia St. 3260 Edgemont Blvd. (North Vancouver) TCA - Vancouver Int. Airport CPA - Vancouver Int. Airport
Kelowna	Rankine, J. A. Underhill, A. S.	
Kimberley	Watkins, R. T.	
Kitimat	Mack, G. J.	
Langley Prairie	Gilham, R. E. Robinson, A. Klass, W. A. S.	
Merritt	Babin, C. E.	
Mica Creek	Baldwin, J. H.	
Nanaimo	Beauchamp, A. J.	
Nelson	Brewster, W. R.	
New Westminster	Harper, R. R.	
North Surrey	McDaniel, B. M.	
Ocean Falls	Rousseau, P. W.	
Oliver	Bilbey, D. L. J.	
100 Mile House	McGregor, H. B.	
Penticton	Jones, N. H.	
Port Alberni	Collins, D. R.	
Powell River	MacLeod, J. L.	
Prince George	Murphy, D. M. D.	
Prince Rupert	Wirges, H. G.	
Princeton	Schinbein, J. E.	
Quesnel	Hicks, A. R.	
Revelstoke	Havens, J. R.	
Richmond	MacKay, H. J.	
Salmon Arm	Doughty, W.	
Sidney	Robertson, D.	
Smithers	Williams, A. R.	
Terrace	Groves, J. S.	
Tofino	Weare, M. K.	
Trail	Hicks, R. B.	
Vancouver	McDiarmid, H. R.	
	Endicott, W. J.	
	Avery, J. F.	
	Balmer, I. A.	
	Chisholm, H. A.	
	Cooper, H. G.	
	Gillis, J. G.	
	Halak, Joseph	
	Hunter, J. G.	
	Irving, R. T.	
	Knott, N. D.	
	MacKay, R. D.	
	Manning, W. L.	
	Manson, A. B.	
	Smith, V. P.	
	Stewart, N. A.	
	Wilson, H. E.	

- VANCOUVER REGION - (Cont'd)

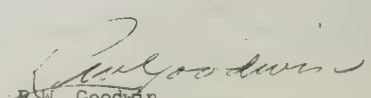
CENTRE	MEDICAL EXAMINER	ADDRESS
	<u>BRITISH COLUMBIA (Cont'd)</u>	
Vanderhoof	Mooney, A. W.	.....
Vernon	McRoberts, A. F.	3105 - 31st St.
Victoria	Bapty, L.	202 - 1175 Cook St.
	Graham, W.	208 - 1175 Cook St.
	Nash, A. B.	c/o Victoria Flying Services, Ltd.,
		Victoria Int. Airport
	Newton, W. E.	1175 Cook St.
	White, R. A.	1625 Oak Bay Ave.
West Vancouver	McCall, W. J.	1718 Marine Dr.
Williams Lake	Ringwood, J. B.	P. O. Box 1727

OUTSIDE CANADA

The following is a list of Medical Examiners located in other countries who are designated by this Department to conduct examinations and to endorse the Licence Renewal Certificate for the subsequent 30 day validity period.

CENTRE	MEDICAL EXAMINER	ADDRESS
Argentina	Agrelo, R. A.	Laprida 1108, Buenos Aires
Australia	Crowley, P.	Airport Medical Service, Sydney International Airport, Mascot, Sydney
England	Sr. Medical Officer	Ministry of Aviation, Shell Mex House, Strand, London W. C. 2.
France	Lafontaine, E.	Medecin-Chef d'Air France, 1, Sq. Max Hymans, 75 Paris 15e, France.
Netherlands	Vaandrager, K.	Director Medical Services, KLM Royal Dutch Airlines Ltd. Schiphol Aerodrome.
Lebanon	Zebouni, F. H.	264 Avenue Bliss, Beirut.
Mexico	Terres Prieto, R.	5 de Mayo 43 - 204 Mexico City, D. F.
Peru	Garrido-Lecca, G.	British American Hospital, Lima.
United States of America	Fiske, S.	150 East 71st Street, New York, NY.
	Hayden, R. O.	5317 Mission Street, San Francisco, California.
	Hutson, J. J.	4489 N. W., 36th Street, Miami, Florida.
	Podlesak, J. I.	612-614 Terminal Building, Lincoln, Nebraska.

A Medical Examiner designated by a Contracting State of the International Civil Aviation Organization may also carry out examinations for the renewal of Canadian flight crew licences, but are not authorized to endorse the Licence Renewal Certificate for the 30 day validity period. In each case, the examiner's report is to be completed in detail on Department of Transport "Report of Medical Examination" Form 26-0010 (available on request) and forwarded by the Examiner to the Region of issue of the last Licence Renewal Certificate.


R.W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



LICENCES AND ENDORSEMENTS

0/3/68

18th March

DEPARTMENT OF TRANSPORT

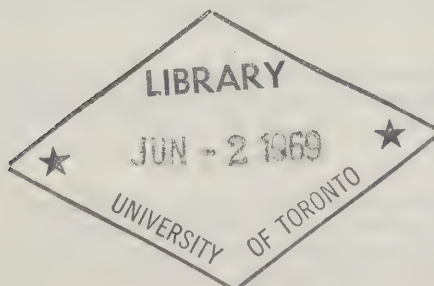
AIR SERVICES
CIVIL AVIATION BRANCH

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THE INSTRUMENT RATING
(Superseding Information Circular 0/19/66 and
Para 2 (a) of Page 15 of Information Circular
0/10/67).

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PART I

Conditions of Issue and Renewal

GENERAL

1. An Applicant shall hold a valid Canadian Pilot Licence.
2. All tests and examinations for issuance of a rating shall be completed during a twelve (12) month period.
3. The instrument rating applies to aeroplanes and helicopters which by virtue of their equipment and operating limitations are authorized for IFR flight.
4. The holder of a valid Class I instrument rating may, subject to the privileges of his pilot licence, act as pilot-in-command or co-pilot under the Instrument Flight Rules.
5. The holder of a valid Class II instrument rating may, subject to the privileges of his pilot licence:
 - (a) act as pilot-in-command under the Instrument Flight Rules provided such a flight is not a commercial flight;
 - (b) act as co-pilot under the Instrument Flight Rules.

EXPERIENCE

An applicant for an instrument rating shall provide proof that he has completed not less than:

1. 150 hours of flight time as pilot-in-command including not less than 100 hours on the category (aeroplane or helicopter) of aircraft for which an instrument rating is desired;
2. 40 hours of instrument time of which not more than 20 hours shall have been completed on Department of Transport approved instrument ground trainers and of which not less than 20 hours shall have been instrument instruction from a pilot whose qualifications are equal to or better than those specified under Part 2, paragraph 1.
3. One cross-country flight, under simulated or actual IFR conditions, of at least 100 nautical miles with an instrument approach to the published minima at two different locations.

KNOWLEDGE

Prior to the initial instrument flight test or the flight test for renewal of an instrument rating which has been invalid for more than twenty-four months, an applicant shall be required to attempt a written examination pertaining to the Instrument Flight Rules and Procedures, Flight Navigation and Radio Aids, and obtain an assessment of not less than 70%.

SKILL

An applicant for an instrument rating shall demonstrate in flight and solely by reference to instruments, his ability;

1. to perform such manoeuvres as are necessary to establish his competency as set out in Part 3;
2. to complete orientation and approach procedures by reference to standard radio navigation aids;
3. to complete such communications procedures as required in the circumstances;
4. to interpret International Morse Code signals transmitted by standard radio navigation aids; and
5. to manoeuvre multi-engine aircraft with one engine inoperative if a rating on such aircraft is sought.

VALIDITY PERIOD

1. The CLASS I INSTRUMENT RATING will be issued valid to the 1st day of the seventh month following the month in which the flight test was conducted but the CLASS II INSTRUMENT RATING privileges will continue until the 1st day of the thirteenth month following.
2. The CLASS II INSTRUMENT RATING will be issued valid to the 1st day of the thirteenth month following the month in which the flight test was conducted.

IFR - TAKE-OFF AND LANDING WEATHER MINIMA

Unless otherwise authorized, the weather minima for take-off and landing by the holder of an Instrument Rating shall be as specified in Table 1 for the Class of Rating held.

TABLE 1

CONDITION	CLASS I Instrument Rating	CLASS II Instrument Rating
TAKE-OFF MINIMA	Canada Air Pilot	Circling Limits as specified in Canada Air Pilot
LANDING MINIMA	Canada Air Pilot	Alternate Limits as specified in Canada Air Pilot
ALTERNATE MINIMA	Canada Air Pilot	Alternate Limits as specified in Canada Air Pilot plus 500 feet

PART 2

INSTRUMENT TRAINING

1. The following are the minimum qualifications required by pilots engaged in instrument instruction for issue of an instrument rating:
 - (a) a qualified flying instructor with an instrument endorsement and a valid instrument rating;
or
 - (b) a valid commercial pilot licence with a valid Class I instrument rating and with 500 hours experience as pilot-in-command.

PART 2A

INSTRUMENT PRACTICE

2. Any pilot who holds a private, commercial, senior commercial or airline transport pilot licence and who is qualified as to category, class and type on the aircraft used, may be considered competent to act as safety pilot for the purpose of instrument flying practice. The pilot undergoing practice must also hold a valid pilot licence endorsed for the category, class and type of aircraft used. Flight time so acquired may not be credited towards the 20 hours of instrument instruction required for the initial issue of an instrument rating.

PART 3
INSTRUMENT STANDARDS

The purpose of the flight test is to establish whether the applicant has acquired or has maintained the knowledge and skill necessary for the safe operation of an aircraft under the Instrument Flight Rules.

In order to qualify for an instrument rating, the applicant should be capable of flying within the tolerances as specified below in conditions of reasonably calm air. Due allowance for momentary variations beyond the tolerances specified below will be made during turbulent conditions and in emergency situations.

1. From take-off until intercept on approach of the final inbound course.

	<u>Class I</u>	<u>Class II</u>
(a) ALTITUDE	± 100 feet	± 200 feet
(b) HEADING AND/OR TRACKING	$\pm 5^{\circ}$	$\pm 10^{\circ}$
(c) AIRSPEED	-5 to +10 knots	-5 to +15 knots

2. Approach from intercept of the final inbound course to minimum altitude.

	<u>Class I</u>	<u>Class II</u>
(a) ALTITUDE PRIOR TO FINAL DESCENT	± 75 feet	± 100 feet
(b) AIRSPEED	- 5 to +10 knots	-5 to +15 knots
(c) ILS LOCALIZER, GLIDE PATH, AND VOR	± 2 dots	± 3 dots
(d) TRACKING (ADF) AND DESCENT (ILS BACK COURSE, VOR, ADF)		

(i) CLASS I - suitable tracking and descent to a minimum altitude of 400 feet so that at a distance of one mile from the approach end of the runway, he may continue inbound for a normal approach without requiring an excess amount of bank for the aircraft being used, (the 400 feet and one mile will vary depending upon the landing minima published on the appropriate chart),

(ii) CLASS II - suitable tracking and descent to a minimum altitude of 800 feet so that at a distance of two miles from the approach end of the runway, he may continue inbound for a normal approach without requiring an excess amount of bank for the aircraft being used. (The 800 feet and two miles noted above will vary depending upon the alternate minima published on the appropriate approach chart).

3. Minimum altitude must be reached and maintained with precision.

4. A Circling approach may be required, depending on traffic conditions, consisting of either a runway procedure or a runway orientation at the discretion of the examinee. If a circling approach is required, the instrument approach must be made to the authorized minimum circling approach altitude followed by a change in heading and the necessary manoeuvring to maintain a flight path that permits a normal landing on the appropriate runway, consisting of either

- (a) an acceptable runway procedure such as that outlined in Canada Air Pilot, or
- (b) a runway orientation, by visual reference, which must be contained within the perimeter of the authorized visibility (which in most cases is $1\frac{1}{2}$ miles) without requiring an excess amount of bank for the aircraft being used.

ITEMS WHICH WILL RESULT IN FAILURE OF THE FLIGHT TEST

1. Failure to fly the aircraft within the prescribed tolerances.
2. Failure to check the flight instruments or radio equipment before flight.
3. Failure to check before flight or to use correctly in flight any one of the de-icing, anti-icing or ice warning systems.
4. Failure to check the electrical charging systems before flight.
5. Failure to apply the correct altimeter setting.
6. Failure to check any vital action item contained in the appropriate check list provided by the manufacturer. If such check lists are not available, check lists should be prepared using those items of the universal check lists outlined in Information Circulars which are vital to the safety of the aircraft being flown.
7. Failure to obtain ATC or simulated ATC clearances when necessary or to comply with such clearance except where the reason for non-acceptance or non-compliance can be justified.
8. Failure to communicate with ATC at any one of the standard or requested reporting points except where the reason for non-compliance can be justified.
9. Failure to correctly select or identify the appropriate navigational aids.
10. Failure to follow the correct procedure in the event of a communications failure.
11. By reasons of lack of skill, knowledge or experience, he is unable to
 - (a) Complete an orientation,
 - (b) Establish a holding pattern within the allocated airspace,
 - (c) Maintain control of the aircraft.

PART 4

GENERAL INFORMATION

1. Prior to arranging an instrument flight test, the applicant shall ensure that
 - (a) his pilot licence is valid,
 - (b) he meets the knowledge and experience requirements for issue or renewal of an instrument rating as contained herein,
 - (c) he has obtained a written recommendation from the holder of a Class I instrument rating if he is undertaking an initial instrument flight test, certifying that he is considered to have reached a satisfactory standard of experience, knowledge and skill to present himself for the instrument flight test,
 - (d) he is able to identify international morse code signals transmitted by standard aids to air navigation (maps and charts may be used for reference),
 - (e) he is in possession of current enroute, terminal and approach charts for the area in which the flight test is to be undertaken,
 - (f) the aircraft to be used for the flight test meets airworthiness requirements, is fitted with dual controls, and is equipped with the instruments and equipment as required by Air Navigation Order, Series II, No. 7,
 - (g) for an initial instrument flight test or a flight test for upgrading of a Class II to a Class I instrument rating, the aircraft radio equipment must include serviceable ILS and/or VOR receivers,
 - (h) an effective method of simulating instrument flight conditions is available which excludes outside visual reference by the pilot being tested without interfering with the view of the safety pilot, if required, or the examiner.
2. The aircraft for the flight test shall be provided by and at the expense of the applicant.
3. Single-engine, centre thrust and multi-engine aeroplanes, or any helicopter which, by its equipment and operating limitations, is authorized for IFR flight may be used for the flight test, subject to meeting the requirements outlined in paragraph 1 above.
4. All instrument flight tests will be conducted by authorized Department of Transport Inspectors except that for renewal of an instrument rating the flight test may be conducted by a company pilot designated by the Department of Transport to conduct instrument flight tests of company personnel.
5. Instrument flight tests shall not be conducted during the course of revenue (commercial) flights under any circumstances.
6. Persons other than those directly involved with the flight test will not be carried on board the aircraft.
7. When the flight test is to be conducted in an aircraft certificated for one pilot, the Department of Transport Inspector will occupy the co-pilot's seat. If the aircraft is certificated for two or more pilots, the Department of Transport Inspector will occupy an observer's seat which must be firmly attached to the aircraft, equipped with a safety belt, and situated to permit the Inspector to have an unobstructed view of the aircraft instrumentation. Except under extenuating circumstances the Department of Transport Inspector will not assume crew duties during the flight test.
8. The instrument flight test may be conducted under instrument flight conditions provided that the applicant or person acting as pilot-in-command holds a valid instrument rating and the weather minima are at or above those specified for the class of rating held. The initial flight test shall, unless otherwise specified by the examiner, be conducted under VFR conditions.
9. The examiner will determine whether the ceiling and visibility are sufficient for the conduct of an instrument flight test under VFR conditions.
10. The criteria for procedures completed during an instrument flight test shall be those contained in the Department of Transport Manual of Instrument Flight Procedures and the appropriate Canada Air Pilot or Department of Transport approved Company Manual.
11. It will be the responsibility of the applicant to advise the examiner of the action being taken with regard to cockpit checks or emergency drills.
12. The entire flight will be conducted in accordance with IFR or simulated IFR flight rules. Instructions received from Air Traffic Control or simulated Air Traffic Control instructions by the examiner must be acknowledged and adhered to except where the reason for non-compliance or non-acceptance can be justified.

13. An aircraft type simulator may not be used for the renewal of instrument ratings except in accordance with such conditions as may be stipulated by the Department of Transport.
14. Subject to the privileges of the applicant's licence, an instrument rating may be issued "valid for"
 - (a) all aeroplanes if the test was completed in a multi-engine aeroplane; or
 - (b) centre thrust multi-engine and single-engine aeroplanes if the test was completed in a centre thrust multi-engine aeroplane; or
 - (c) single-engine aeroplanes if the test was completed in a single-engine aeroplane; or
 - (d) helicopters if the test was completed in a helicopter.
15. A Class I Multi-engine instrument rating is required for the issue or renewal of an Airline Transport Pilot Licence. A Class I Instrument Rating for single-engine or multi-engine centre thrust aircraft, or a Class II Instrument Rating for any type of aircraft will not be accepted as satisfying the instrument rating requirement for the issue or renewal of this licence.
16. Copies of Instrument Flight Rating Reports will not be supplied to the examinee.
17. Where the employer of the examinee is a Commercial Air Carrier and when the Instrument Flight Rating Report is required to complete the company training records required by the Department of Transport, copies of the Report may be provided to the employer. Where the employer is not a Commercial Air Carrier the Report may be provided to the company, provided that the applicant agrees in writing at the time of the flight test.

PART 5

THE FLIGHT TEST

The instrument flight test will consist of pre-flight briefing, pre-flight preparation, departure and enroute procedures, airwork, terminal procedures and emergency procedures. The average flight time required for completion of the airborne exercises is 1:30 hours, but may vary depending upon weather, traffic, etc. The various exercises to be completed during the above-noted phases of the instrument flight test are outlined below:

PRE-FLIGHT BRIEFING

A pre-flight briefing is essential to ensure that the applicant and other crew members are aware of their responsibilities during the instrument flight test. The briefing will normally consist of the following items:

1. aircraft and crew management under normal and emergency conditions,
2. ceiling, visibility and icing conditions to be encountered, or to be simulated for test purposes,
3. liaison with ATC and use of radio aids,
4. brief description of the test.

PRE-FLIGHT PREPARATION

1. In the case of an initial flight test or a flight test for up-grading of a Class II to a Class I instrument rating, the applicant shall prepare a flight plan for a simulated cross-country IFR flight. Flight planning shall include the procurement of available weather reports and forecasts, as well as all pertinent information published in NOTAM for the area in which the flight test is to be completed. Assessment will be on the basis of accuracy, adequacy, and efficiency of the planning displayed.
2. The applicant will be assessed on cockpit checks which would normally be completed for flight in the weather conditions outlined in the pre-flight briefing.
3. The applicant will receive a departure clearance from Air Traffic Control or the testing officer and will be assessed on his interpretation of the clearance.
4. The applicant will be assessed on the selection and identification of navigational aids prior to take-off. The applicant should prepare for enroute tracking and also the possibility of an emergency situation on take-off requiring immediate return to the airport.

DEPARTURE AND ENROUTE PROCEDURES

The items assessed during this phase of the flight test will be take-off, initial climb, transition to instruments, climb to altitude, climbing turns, level flight, use of available radio navigation equipment and facilities, and adherence to clearance.

AIRWORK

The items normally assessed during this phase of the flight test will include rate one, medium, steep and climbing and descending co-ordinated turns; and orientations, holding, bracketing and tracking on "VOR and ADF facilities".

TERMINAL PROCEDURES

The items normally assessed during this phase of the flight test will be transition to the approach facility, approaches, missed approach, runway procedure or orientation, and landing. Except under extenuating circumstances, three approaches on at least two different facilities shall be completed in the case of a flight test for the initial issue of an instrument rating, or two approaches on different facilities for the renewal of an instrument rating. For the initial issue of an instrument rating, or for upgrading from a Class II to a Class I instrument rating, a VOR or ILS approach shall be completed in meeting the above requirements.

EMERGENCY PROCEDURES

Emergency situations such as communications failure, engine or electrical fire, or engine failure may be simulated during any phase of the flight test. An applicant will be assessed on his ability to control the aircraft during the emergency situation and the thoroughness of his corrective action.

FLIGHT DE-BRIEFING

1. If the instrument flight test is assessed as meeting a Class I standard, the applicant will be advised of any exercises requiring improvement.
2. If the instrument flight test is assessed as meeting a Class II standard, the applicant will be advised of those exercises which were not completed to a Class I standard as well as those exercises requiring improvement.
3. If the instrument flight test is assessed failed, all aspects of the demonstration will be reviewed and the candidate informed of the reasons for the assessment.



R.W. Goodwin
Director, Civil Aviation.

ERRATA

Information Circular 0/3/68, Licences and Endorsements, dated 18th March. Delete the introduction on page 1, and insert the following.

THE INSTRUMENT RATING

(Superseding Information Circular 0/19/66 and Para 2 (d) of Page 15 of Information Circular 0/10/67).



0-5-68



INFORMATION CIRCULAR

**CUSTOMS
AND
IMMIGRATION**

DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Customs and Immigration

0/5/68
10th April

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 12

CUSTOMS CLEARANCE PROCEDURES

and

AUTHORIZED CANADIAN AERODROMES OF ENTRY AND EXIT
(Superseding Information Circular 0/3/67)

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SECTION 2	SPECIAL SERVICE AND TRANSPORTATION CHARGES	2
SECTION 3	FORMALITIES ON LANDING	2
SECTION 4	FORMALITIES ON DEPARTURE	3
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SECTION I

CUSTOMS NOTIFICATION REQUIREMENTS

Aircraft entering Canada are required to land initially at one of the authorized Canadian customs airports of entry and exit listed in Section 7. Advance notice as to time and place of first arrival must be forwarded to the appropriate officer of customs by mail, telephone or telegraph. If considered advisable the aircraft operator may request the Canadian Customs officer to furnish a reply, which can then be carried into Canada by the pilot. The importance of this will be realized when one considers the possibility of over-flying the intended airport, landing at another place by mistake, or making a forced landing, in all of which cases the reply from the Canadian Customs officer will assist the pilot in making his report to Customs or the Royal Canadian Mounted Police as the case may be. Without such a telegram the aircraft's presence at a place where no advance notice of arrival has been received might cause misunderstanding.

A reciprocal arrangement for notifying Customs and Immigration officials via flight-plans is also available for flights between the United States and Canadian Airports listed in Section 6. If first arrival will be at a port of entry not listed in Section 6, it is the pilot's responsibility to notify the appropriate officer of Customs in advance, by mail, telephone or telegraph as indicated above.

SECTION 2

SPECIAL SERVICE AND TRANSPORTATION CHARGES

Pleasure, Military and Government Aircraft

Customs service is provided free of charge for "pleasure", military or government aircraft operating internationally, but transportation charges are assessed when it is necessary for a Customs officer to make a special trip to the airport. The term "pleasure" in this instance includes company-owned aircraft when used solely for health or pleasure. When an aircraft is rented or chartered from an airline, flying club or other type of rental agency, the purpose of the flight rather than the ownership of the aircraft is the determining factor with respect to the assessment of special service charges.

Unscheduled Commercial and Company Aircraft

With the exception of Sundays, where officers are on duty at an airport, service is rendered to unscheduled commercial, chartered and company aircraft without assessment of special service charges. On Sundays special service charges are assessable only when documentation or physical checking of commercial goods intended for clearance or export is necessary.

Where officers are not on duty, service is rendered without charge during the hours of 8 a.m. to 5 p.m., Monday through Saturday. Beyond these hours and on Sundays special service charges are assessable only when documentation or physical checking of commercial goods intended for clearance or export is necessary.

Special service charges are assessed at the rate of \$5.00 per hour or a portion thereof with a minimum payment of \$10.00.

SECTION 3

FORMALITIES ON LANDING

- (a) First landing of aircraft shall be made at the Customs Airport or Aerodrome where advance notice of arrival has been given.
- (b) On arrival, the owner or pilot of the aircraft shall report to the proper officer of Customs and complete the prescribed form.

SECTION 3 (Cont'd)

This report will constitute an inward and outward report except as provided for in subsection (d). In the event of a forced landing or diversion to another airport, the pilot is to report the circumstances as soon as possible to the nearest Collector of Customs or to the Royal Canadian Mounted Police.

- (c) Provided the customs officer is satisfied that the aircraft will be used by a non-resident for purposes of health or pleasure only, and not for trade or profit, he will issue a cruising permit on the prescribed form to the owner or pilot for a period not exceeding three months. A company-owned aircraft or aircraft rented from an airline, flying club or rental agency may also be issued a permit provided such aircraft will be used solely for purposes of health or pleasure.
- (d) Once the pilot is in possession of a valid permit, further reporting at Customs will not be necessary, either prior to or at time of departure, unless articles were documented on a temporary permit at time of arrival in Canada or unless other goods which require documentary control are being carried on the outward flight. In this event report outward must be filed with Customs at actual time of departure from Canada.

SECTION 4

FORMALITIES ON DEPARTURE

Provided the owner or pilot has a valid cruising permit, further reporting to Customs at time of departure is not necessary, unless goods which require documentary control are being carried on the outward flight.

SECTION 5

LICENSING REQUIREMENTS FOR VISITING PILOTS

The pilot of a visiting aircraft may be required, at the time of his first landing in Canada, to produce his pilot's licence and Aircraft Log Book, for examination by Customs, Immigration, Civil Aviation officials or by the Royal Canadian Mounted Police.

A person flying a United States aircraft into Canada must be in possession of a U.S.A. unrestricted certificate of airworthiness for such aircraft and a valid U.S.A. pilot licence, excepting when special permission has been granted in respect of aircraft operating with other than an unrestricted certificate of airworthiness.

A tourist who is a holder of a U.S.A. Pilot Certificate may fly Canadian registered aircraft by obtaining a Temporary Private Pilot Permit (Tourist) on application to the Regional Superintendent, Air Regulations and after having passed a written examination on the Air Regulations and air traffic rules and procedures.

SECTION 6

CANADIAN AND UNITED STATES "ADCUS" AIRPORTS

As a result of an agreement between the Federal Aviation Administration of the United States, the Department of Transport, and the Department of National Revenue, a "Communications-Operation Plan" for Customs notification is in effect. The plan provides that a pilot, when filing a flight plan for a flight to certain Customs authorized Airports, may request that the Customs and Immigration services be notified of the expected time of arrival of the aircraft at a particular aerodrome. Notification of the expected time of arrival of the aircraft will be through the appropriate airport tower or aeradio station as an alternative to notification by telephone or telegraph direct from the pilot. This may be done by adding the abbreviation "ADCUS" in the "OTHER INFORMATION" portion of the flight plan to indicate that Customs and Immigration agencies are to be notified. If the flight is from Canada to the United States, the number of U.S. and non U.S. citizens must be included on the flight plan. If the flight is from United States to Canada, information as to the citizenship of the pilot or passengers is not required by Canadian authorities.

SECTION 6(Cont'd)

AIRPORTS AT WHICH THE "COMMUNICATIONS-OPERATION PLAN" APPLIES ARE AS FOLLOWS:

1. CANADIAN AIRPORTS TO WHICH "ADCUS" MESSAGES MAY BE TRANSMITTED BY FLIGHT PLAN:

<u>AIRPORT OF ENTRY</u>	<u>COMMUNICATION STATION</u>	<u>CUSTOMS HOURS OF SERVICE AT AIRPORT</u>
Abbotsford, B.C. (1)	Abbotsford Aeradio	On request
Bracebridge, Ont. (1)	Muskoka Aeradio	On request
Brandon, Man.	Brandon Aeradio	On request
Calgary, Alta.	Calgary Tower	0800M-2400M (2)
Charlottetown, P.E.I.	Charlottetown Aeradio	On request
Chilliwack, B.C. (1)	Abbotsford Aeradio	On request
Cranbrook, B.C. (1)	Kimberley Aeradio	On request
Edmonton International Airport, Alta.	Edmonton International Tower	24 hours
Edmonton Industrial, Alta. (1)	Edmonton Tower	On request
Fort William, Ont.	Lakehead Tower	On request
Fredericton, N.B.	Fredericton Tower	On request
Frobisher, N.W.T.	Frobisher Tower	On request
*Gore Bay, Ont. (1)	Gore Bay Aeradio	On request
Halifax International Airport, N.S.	Halifax Tower	0700A-2300A (2)
Kamloops, B.C. (1)	Kamloops Aeradio	On request
Kelowna, B.C. (1)	Penticton Aeradio	On request
Kenora, Ont. (1)	Kenora Aeradio	On request
Lethbridge, Alta.	Lethbridge Tower	On request
London, Ont.	London Tower	0800E-2400E (2)
Medicine Hat, Alta. (1)	Medicine Hat Aeradio	On request
Moncton, N.B.	Moncton Tower	On request
Mont Joli, Que.	Mont Joli Aeradio	On request
Montreal International Airport, Que.	Montreal Tower	24 hours
Nanaimo, B.C.	Nanaimo Aeradio	On request
North Bay, Ont.	North Bay Tower	On request
Ottawa, International Airport, Ont.	Ottawa Tower	0800E-2400E (2)
Owen Sound, Ont.	Warton Aeradio	On request
Penticton, B.C. (1)	Penticton Aeradio	On request
Port Hardy, B.C. (3)	Port Hardy Tower	On request
Prince George, B.C. (1)	Prince George Aeradio	On request
Quebec, Que.	Quebec Tower	0900-1700E (2) 1 Apr-30 Nov.
Regina, Sask.	Regina Tower	On request
Saint John, N.B.	Saint John Tower	On request
Sandspit, B.C. (3)	Sandspit Aeradio	On request
Saskatoon, Sask. (1)	Saskatoon Tower	On request
Sault Ste Marie, Ont.	Sault Ste Marie, Ont. Aeradio	On request
Sept-Îles, Que.	Sept-Îles Tower	On request
Sherbrooke, Que.	Sherbrooke Aeradio	On request
Sudbury, Ont. (1)	Sudbury Aeradio	On request
Swift Current, Sask.	Swift Current Aeradio	On request
Toronto International Airport, Ont.	Toronto Tower	24 hours
Toronto Island, Ont. (1)	Toronto Island Tower	On request
Vancouver International Airport, B.C.	Vancouver Tower	24 hours
Victoria International Airport, B.C.	Victoria Tower	0800P-2300P (2)
Whitehorse, Y.T.	Whitehorse Tower	On request
Windsor, Ont.	Windsor Tower	0700E-2300E (2)
Winnipeg International Airport, Man.	Winnipeg Tower	24 hours
Yarmouth, N.S.	Yarmouth Aeradio	On request
Yorkton, Sask.	Yorkton Aeradio	On request

* Customs service available at Gore Bay, Ont. only from 1st May to 30th November annually.

SECTION 6 (Cont'd)

Customs hours of service at Quebec Airport 0900-1700E from May 1st to November 30th annually.

- NOTES:
- (1) Airports to be used by tourist planes only.
 - (2) At other hours attendance is on request.
 - (3) Clearance of intransit aircraft only.

2. UNITED STATES AIRPORTS TO WHICH "ADCUS" MESSAGES MAY BE TRANSMITTED BY FLIGHT PLAN:

ALABAMA

Mobile/Bates Field

ALASKA

Anchorage/Anchorage Int'l
Annette Island/Annette Island
Fairbanks/Fairbanks Int'l
Juneau/Juneau Municipal
Juneau/Juneau SPB
Ketchikan/Ellis Airlines SPB
Kodiak/Kodiak SPB
Kodiak/Kodiak NS
Kodiak/Kodiak Mun
Northway/FAA Fld
Pelican/Pelican SPB
Petersburg SPB
Sitka SPB

ARIZONA

Douglas/Bisbee-Douglas Int'l
Nogales/Nogales Int'l
Tucson/Tucson Int'l
Yuma/Yuma Int'l

CALIFORNIA

Calexico/Calexico Int'l
Los Angeles/Los Angeles Int'l
San Diego/San Diego Int'l
San Francisco/San Francisco Int'l

CONNECTICUT

Hartford/Brainard Field
Windsor Locks/Bradley Field

DISTRICT OF COLUMBIA

Washington/Dulles Int'l
Washington/Washington National

FLORIDA

Fort Lauderdale/Fort Lauderdale-Hollywood Int'l
Jacksonville/Imeson Mun
Key West/Key West Int'l
Miami/Miami Int'l
Miami/Chalk SPB
St. Petersburg/Clearwater Int'l
Tampa/Tampa Int'l
West Palm Beach/Palm Beach Int'l

HAWAII

Honolulu/Honolulu Int'l

ILLINOIS

Chicago/Meigs Field
Chicago/Midway
Chicago/O'Hare Int'l

INDIANA

Indianapolis/Weir Cook (2 hours advance notice)

LOUISIANA

New Orleans/New Orleans Int'l (Moisant Field)

MAINE

Bar Harbour/Bar Harbour
Caribou/Caribou Municipal
Houlton/Houlton Int'l
Portland/Portland Municipal

MARYLAND

Baltimore/Friendship Int'l

MASSACHUSETTS

Bedford/Hanscom Field
Boston/Logan Int'l
Worcester/Worcester Municipal

MICHIGAN

Detroit/Detroit City
Detroit/Metropolitan Wayne County
Hancock/County Meml
Marquette/County
Pellston/Emmet County
Port Huron/Baker's Field
Port Huron/St. Clair County
Sault Ste. Marie/Sault Ste. Marie Municipal

MINNESOTA

Baudette/Baudette Municipal
Duluth/Duluth Int'l
Duluth/Sky Harbour
International Falls/Falls Int'l
Minneapolis/Minneapolis-St. Paul Int'l
(Wold Chamberlain)
Rainer/Rainer International SPB

MISSOURI

St. Louis/Lambert (3 hours advance notice)

MONTANA

Cut Bank/Cut Bank
Great Falls/Great Falls Int'l
Havre/Havre City County Airport
Glasgow/Glasgow Int'l
Sweet Grass/Ross Int'l

NEBRASKA

Omaha/Eppley Airfield

NEW JERSEY

Newark/Newark

NEW MEXICO

Columbus/Columbus

SECTION 6(cont'd)

NEW YORK

Albany/Albany County
Buffalo/Greater Buffalo Int'l
Massena/Richards Field
New York/John F. Kennedy Int'l
New York/La Guardia
Niagara Falls/Niagara Falls Municipal
Ogdensburg/Ogdensburg Municipal
Rochester/Monroe County
Rouses Point/Rouses Point SPB
Syracuse/Hancock
Watertown/Watertown Municipal
Niagara Falls/Niagara Falls

NORTH DAKOTA

Grand Forks/Grand Forks Int'l
Minot/Minot Int'l
Pembina/Pembina Municipal
Portal/Portal Municipal
Williston/Sloulin Field

OHIO

Akron/Municipal
Akron/Akron-Canton
Cincinnati/Lunken Field
Cleveland/Cleveland Hopkins
Kent/Kent
Toledo/Toledo Express
Toledo/National
Sandusky/Griffing-Sandusky
Columbus/Port Columbus Int'l
(Except Sat. 8.30-5.00PM)
Dayton/Cox (6 hours advance notice)

OREGON

Portland/Portland Int'l

PENNSYLVANIA

Erie/Port Erie
Philadelphia/Philadelphia Int'l
Pittsburg/Greater Pittsburgh

PUERTO RICE

San Juan/Puerto Rico Int'l

RHODE ISLAND

Providence/Theodore Francis Green Airport

SOUTH CAROLINA

Charleston/Charleston Municipal

TEXAS

Brownsville/Rio Grande Valley Int'l
Corpus Christi/Corpus Christi Int'l
Dallas/Love Field
Del Rio/Del Rio Int'l
El Paso/El Paso Int'l
Houston/Houston Int'l
Laredo/Laredo Int'l
McAllen/Miller Int'l
San Antonio/San Antonio Int'l

VERMONT

Burlington/Burlington Municipal

VIRGIN ISLANDS

St. Thomas/Harry S. Truman

VIRGINIA

Norfolk/Norfolk Municipal

WASHINGTON

Bellingham/Bellingham Municipal
Friday Harbour/Friday Harbour SPB
Oroville/Dorothy Scott
Oroville/Dorothy Scott SPB
Port Townsend/Jefferson County Int'l
Port Townsend/Port Townsend Bay
Seattle/Boeing Field
Seattle/Lake Union Air Service (Seaplanes)
Seattle/Seattle -Tacoma Int'l
Spokane/Spokane Int'l
Spokane/Felts Field

WISCONSIN

Milwaukee/General Mitchell Field

SECTION 7

AUTHORIZED CANADIAN CUSTOMS AIRPORTS AND AERODROMES OF ENTRY AND EXIT

NOTE: The symbol (*) indicates service restricted to non-commercial traffic. The absence of any symbol indicates use for all purposes.

The symbol (S) indicates that Customs services are available during the summer season only.

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

NEWFOUNDLAND

Gander
Goose Airport
Stephenville
St. John's

Gander International Airport
Goose Airport
Stephenville Airport
Torbay Airport

See Information Circular "Aerodromes" for restriction concerning the use of Goose Airport.

NOVA SCOTIA

Digby
Halifax

*Digby Airport
Halifax International Airport
Shearwater Aerodrome, Land
and Seaplanes (Prior permis-
sion from Base Commander
req'd)
Greenwood Aerodrome (Prior
permission from Base Comman-
der req'd)
Trenton Airport

Middleton

New Glasgow

Sydney

Sydney Airport
* Sydney Harbour for Seaplanes

Yarmouth

Yarmouth Airport

SECTION 7(Cont'd)

CUSTOMS OFFICE

PRINCE EDWARD ISLAND

Charlottetown

Summerside

NAME OF AERODROME
OR LANDING AREA

Charlottetown Airport
*Charlottetown Harbour for
Seaplanes
Summerside Aerodrome (Prior
permission from Base Commander
req'd)

NEW BRUNSWICK

Andover

Campbellton

Centreville
Chatham

Dalhousie
Edmundston
Fredericton

Grand Falls
Moncton
Saint John
Saint Stephen
St. Leonard
Woodstock

*River Landing for Seaplanes
at Andover
*River Landing for Seaplanes
at Cross Point
*Florenceville Aerodrome
Chatham Aerodrome (Prior
permission from Base Commander
req'd)
*Charlo Airport
Edmundston Municipal Airport
Fredericton Airport
River Landing for Seaplanes
*Grand Falls Airport
Moncton Airport
Municipal Airport
*Saint Stephen Airport
*River Landing for Seaplanes
*Houlton Airport, Maine, U.S.A.

QUEBEC

Baie Comeau

Cowansville
Drummondville
Estcourt

Gaspe
Granby
Grand'Mère
Lachute
Lac Megantic

Montreal International Airport
Quebec

Rimouski

Municipal Airport
Seaplane Landing Manicouagan
River
*Sweetsburg Airport
*Drummondville Municipal Airport
*Seaplane and Skiplane landing
Lake Pohenegamook
*Gaspe Municipal Airport
Granby Airport
Lac A La Tortue for Seaplanes
*Lachute Airport, Ayresville, Que.
*Municipal Airport
*Seaplane Landing on Lac Megantic
Montreal International Airport
Quebec Airport
Lake St. Augustin for Seaplanes
*Charlevoix Airport
Rimouski Airport
Seaplane Base at Rimouski Wharf
Mont Joli Airport

SECTION 7(Cont'd)

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

QUEBEC (Cont'd)

St. Jean
Sept-Iles

Sherbrooke

Trois-Rivieres
Val d'Or

*Municipal Airport
Sept-Iles Airport
Lake Rapids for Seaplanes
*Sherbrooke Airport
*Brompton Lake for Seaplanes
*Trois-Rivieres Airport
*Val d'Or Aerodrome

ONTARIO

Barrie
Belleville
Bracebridge

*Barrie Airport
Belleville Airport
*Muskoka Airport
*Lake Landing for Seaplanes at
Muskoka Wharf, Gravenhurst (S)

Brantford
Brockville

*Brantford Airport
*Brockville Airport

Chatham
Cornwall
Fort Frances

*River Landing for Seaplanes
*Municipal Airport
*River Landing for Seaplanes
*Basswood Lake (S) for Seaplanes
*Prairie Portage (S) for Seaplanes
*Sand Bay, Rainy Lake for Seaplanes
*Sand Point Lake (S) for Seaplanes
International Falls Municipal
Airport

Gananoque

*Municipal Airport
*River Landing for Seaplanes

Goderich

*Lake Landing for Seaplanes
Goderich Airport

Guelph
Hamilton

*Guelph Air Park
Hamilton Airport
Lake Landing for Seaplanes

Hanover
Kenora

*Hanover Airport
*Kenora Airport
Lake Landing for Seaplanes
Kingston Airport

Kingston

*Lake Landing for Seaplanes
*Waterloo-Wellington Airport

Kitchener
Lansdowne
Leamington

*Lake of the Isles for Seaplanes
*Pele Island Municipal Airport
*Cottam Airport

Lindsay
Little Current

*Lindsay Municipal Airport
*Gore Bay Airport (S)
*Lake Landing for Seaplanes
Little Current Airport

London
Newmarket
Niagara Falls
North Bay

*Lake Landing for Seaplanes
London Airport

Orillia

*Buttonville Airport
*Niagara Helicopters Heliport
North Bay Airport
*Trout Lake Harbour for Seaplanes
*Lake St. John Aerodrome
*Lake Landing for Seaplanes

SECTION 7(Cont'd)

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

ONTARIO (Cont'd)

Oshawa
Ottawa International

Owen Sound

Parry Sound
Pembroke
Perth
Peterborough
Picton

Pigeon River

Port Arthur

Rainy River

St. Catharines
St. Thomas
Sarnia

Sault Ste. Marie

Simcoe
Smiths Falls
Southampton
Sudbury

Tillsonburg
Timmins
Toronto International Airport

Trenton

Wallaceburg
Welland
Windsor

Woodstock

Oshawa Municipal Airport
Ottawa International Airport
Rockcliffe Aerodrome
River Landing for Seaplanes
*Owen Sound Airport
*Lake Landing for Seaplanes
*Lake Landing for Seaplanes
Pembroke Airport
*Perth Municipal Airport
*Peterborough Airport
*Picton Airport
*Lake Landing for Seaplanes
*Saganaga Lake for Seaplanes
May 14- Oct 14
Lakehead Airport
*Lake Landing for Seaplanes
*Baudette Airport, Minnesota, U.S.A.
*River Landing for Seaplanes
*Cyclone Island, Lake of the Woods
*Sturgeon Channel, Lake Landing
for Seaplanes (S)
*St. Catharines Airport
*St. Thomas Municipal Airport
Sarnia Airport
*River Landing for Seaplanes
(Sarnia Yacht Club)
Sault Ste. Marie Airport, Ont.
*River Landing for Seaplanes
Airdale Base for Seaplanes
*Simcoe Airport
*Smiths Falls Airport
*Port Elgin - Saugeen Airport
*Sudbury Airport
Ramsay Lake Seaplane Base
*Tillsonburg Municipal Airport
*Timmins Airport
Toronto International Airport
*Toronto Island Airport (Land and
Seaplanes)
Trenton Aerodrome (Prior per-
mission from Base Commander
req'd)
*Wallaceburg Airport
*Municipal Airport
Windsor Airport
*River Landing for Seaplanes
*Woodstock Airport

MANITOBA

Boissevain

Brandon
Emerson
Winkler
Sprague

Winnipeg

*Int'l Peace Gardens Airport, North
Dakota, U.S.A.
Municipal Airport
*Pembina Airport, North Dakota, U.S.A.
*Haskett Aerodrome
*Boundary line airstrip for light
aircraft
Winnipeg International Airport

SECTION 7(Cont'd)

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

SASKATCHEWAN

Estevan

*Estevan Airport
*Border airstrip, Noonan,
North Dakota, U.S.A.
DND Aerodrome (Prior per-
mission from Base Commander
req'd)

Moose Jaw

*West-Air Airport, Moose Jaw North

*Airstrip at East Poplar River

*West Poplar River Airport

Prince Albert Airport

Municipal Airport

*Saskatoon Airport

*Swift Current Airport

*Weyburn Airport

*Willow Creek Aerodrome

*Yorkton Airport

Prince Albert
Regina
Saskatoon
Swift Current
Weyburn
Willow Creek
Yorkton

ALBERTA

Calgary
Coutts
Edmonton

Municipal Airport

*Ross International Airport

*Edmonton Industrial Airport

Edmonton International Airport

Namoo Aerodrome (Prior per-

mission from Base Commander
req'd)

Yellowknife Vessel reporting
station for aircraft May 15-Sep 15
Lethbridge Airport

Lethbridge

*Waterton Lakes, Lake Landing
for Seaplanes (S)

*Medicine Hat Airport

Medicine Hat

BRITISH COLUMBIA

Huntingdon
Cascade City

*Abbotsford Airport

*Grand Forks Airport

*Cascade-Laurier (Avey Field)
Aerodrome

*Chilliwack Airport

*Campbell River Airport

*River Landing for Seaplanes

*Municipal Airport

*Moyie Lake for Seaplanes

*Kamloops Airport

*Seaplane Base

*Kelowna Airport

*Seaplane Base (City Dock)

*River Landing for Light Seaplanes
at Rykerts

Terrace Airport (intransit
aircraft only)

Nanaimo Airport

B.C. Airlines Limited Dock
for Seaplanes

*Nelson Seaplane Landing

*Aerodrome at Nighthawk, Wash.

Chilliwack
Courtenay

Cranbrook

Kamloops

Kelowna

Kingsgate

Kitimat

Nanaimo

Nelson
Osoyoos

SECTION 7 (Cont'd)

CUSTOMS OFFICE

NAME OF AERODROME
OR LANDING AREA

BRITISH COLUMBIA (Cont'd)

Penticton	*Penticton Airport
Port Alberni	*Skaha Lake for Seaplanes
	*Alberni Airport
	*B.C. Airlines Ltd. Dock for Seaplanes
Powell River	*Municipal Airport
	*Powell Lake for Seaplanes
Prince George	*Prince George Airport
Prince Rupert	Seal Cove, Seaplanes only
	*Seaplane Landing at Wrangell, Alaska
	*Sandspit Airport (Clearance of intransit aircraft only)
Rykerts Trail	*Porthill Idaho, U.S.A.
	*Castlegar Airport
Vancouver	*Columbia Gardens Airport
	Vancouver International Airport (Land and Water)
Vernon	*Vernon Airport
Victoria	Victoria International Airport (Land & Water)
	*Port Hardy Airport, Land Planes only
	*Bedwell Harbour, Seaplanes Only (S)

YUKON TERRITORY

Dawson	Dawson Airport
	River Landing for Seaplanes
	*Old Crow, River Landing for Seaplanes
Whitehorse	Whitehorse Airport
	River Landing for Seaplanes
	Fort Nelson Airport
	Carcus Aerodrome
	River Landing for Seaplanes at Carcus

NORTHWEST TERRITORY

Frobisher Airport (RCMP)	Frobisher Airport
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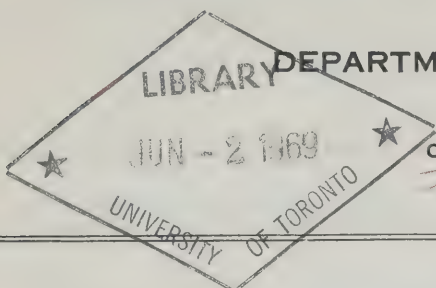
R.W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
Publications
General

0/7/68
1st May



DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 2

TRANS CANADA (McKEE) TROPHY

NOMINATION INFORMATION AND FORMAT

The Trans Canada (McKee) Trophy which was presented by the late James Dalzell McKee, as a memorial of the first Trans-Continental Sea Plane flight made in September of 1926, is in theory, to be awarded each year for the encouragement of Canadian Aviation in accordance with the principles outlined in the agreement and subject to the Conditions of Award as approved by the Minister of National Defence, the official trustee of the award.

Over the years this Trophy has been presented some 35 times to various outstanding Canadian aviators or leaders in the Canadian Aviation Industry.

In recent years the trophy was temporarily retired as the terms and conditions of the award could not be applied realistically to the changing aviation situation. However, the Conditions of Award were recently updated and re-aligned with specific emphasis on air operations. In future the Trophy will be awarded on the basis of excellence in the field of flying operations.

The revised Conditions of Award are:

- a. The recipient shall be one who is domiciled in Canada and who is identified with Canadian flying, either military or civil.
- b. Qualification as aircrew is a prior claim to consideration, but lack of such qualification does not exclude others from consideration providing they qualify in all other respects as included in these Conditions of Award.
- c. Contribution to operations which advance the cause of aviation shall receive consideration over exploits of a dangerous nature serving no useful purpose.
- d. Continuous performance throughout the year is worthy of consideration, however, the trophy is awarded primarily for recognition of an outstanding contribution or spectacular achievement in the field of Air Operations.
- e. Pioneering of new areas of Aircraft Operations is to receive special consideration.

Nominations for the Trans Canada (McKee) Trophy are invited from all segments of Canadian aviation; Commercial and private operators, Government Departments using aircraft and the military. Also, any person who in his opinion has performed meritorious service may forward his own name for consideration. Nominations will be solicited annually; however, if in the opinion of the Award Committee and with the agreement of the Minister of National Defence the contributions of the nominees are not consistent with the stature and intent of the Award no selection will be made for that year.

NOMINATION FORMAT

The following format is suggested for purposes of standardization of submissions and to ensure each nominee receives full consideration:

Nominee - Name in full.

Historical Facts - Include birthplace, short resumé of education and training plus history of employment.

Association with Aircraft Operations - Provide a resumé of the nominee's association with aircraft operations.

Details of Contribution or Achievement - Detailed description of contribution or operational achievement which is to be of primary consideration by the Award Committee. Additional operational contributions may be provided as supporting information.

Pioneering - Examples of pioneering activities should be fully authenticated and supported with detailed description of the activity.

All organizations operating aircraft in Canada as well as interested individuals, are urged to give this matter careful consideration and submit recommendations, thus ensuring that those taking an active part in the advancement of aviation in Canada are not overlooked.

Nominations are to be forwarded directly to the Chairman, Trans Canada (McKee) Trophy Award Committee, Canadian Forces Headquarters, Department of National Defence, Ottawa, Ontario, Attention: Brigadier General W. K. Carr, and are to be received not later than August 1st, 1968.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Fees and Charge

0/8/68
1st June

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

AIR SERVICES FEES REGULATIONS (Amending Information Circular 0-6-67)

DELETIONS:

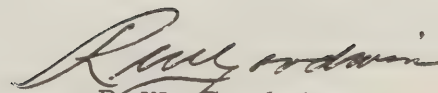
Pages 3, 4, 7 and 8 of Information Circular 0-6-67 are to be deleted in their entirety.

INSERTIONS:

The amendment to Information Circular 0-6-67 is issued as replacement pages and the information contained therein is to be effective July 1st, 1968.

Changes are marked by a vertical line in the margin.




R. W. Goodwin,
Director, Civil Aviation.

TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).



INFORMATION CIRCULAR



Summary

0/9/68
1st July

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DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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INFORMATION CIRCULARS IN EFFECT - 1st JULY, 1968

1959	1964	1965	1966	1967	1968
0/14/59	0/21/64	0/2/65	0/3/66	0/12/66	0/2/68
	0/22/64	0/5/65	0/6/66	0/13/66	0/3/68
<u>1963</u>	0/24/64	0/6/65	0/7/66	0/16/66	0/4/68
	0/27/64	0/7/65	0/8/66	0/17/66	0/5/68
0/22/63	0/30/64	0/13/65	0/9/66	0/18/66	0/6/68
	0/31/64	0/16/65	0/10/66	0/23/66	0/7/68
	0/33/64		0/11/66	0/26/66	0/8/68

NOTE: Publication changes and Amendments.

0/14/65 superseded by 0/4/68
0/19/66 superseded by 0/3/68
0/22/66 superseded by 0/4/68
0/25/66 superseded by 0/2/68
0/3/67 superseded by 0/5/68
0/5/67 cancelled - time expired
0/12/67 superseded by 0/4/68
0/1/68 superseded by 0/9/68

AERODROMES

0/4/68	SECTION 1	LAND, WATER, ICE AND HELIPORTS Definitions Private Buoy Regulations Physical Characteristics of Aerodromes Visual Ground Aids (Day) Visual Ground Aids (Night) Use of Airport Lighting Equipment TOUCHDOWN ZONE AND CENTRELINE LIGHTING Runway Numbering Visual Approach Slope Indicator (VASI) Heliports
	SECTION 2	CONDITIONS FOR USE OF CERTAIN CIVIL AND MILITARY AERODROMES Use of Aerodromes by Aircraft Engaged in International Air Carrier Operations Use of Department of National Defence Aerodromes by Civil Aircraft USE OF DISTANT EARLY WARNING (DEW) LINE AERODROMES Use of Helicopter Landing Sites - Ontario.
0/6/68	TOUCHDOWN	ZONE AND CENTRELINE LIGHTING - COLOUR CODING TORONTO INTERNATIONAL AIRPORT

AERONAUTICAL INFORMATION SERVICES

0/9/67	SECTION 1	AERONAUTICAL INFORMATION SERVICES AVAILABLE IN CANADA
	SECTION 2	DISTRIBUTION OF AERONAUTICAL PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM
	SECTION 3	CONTENTS OF AERONAUTICAL PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM
	SECTION 4	AERONAUTICAL CHARTS
	SECTION 5	SOURCES OF SUPPLY AND PRICES - CANADIAN AND FOREIGN PUBLICATIONS AND CHARTS

AIRCRAFT GENERAL

0/22/64	CARRIAGE OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES AND SUBSTANCES ON BOARD AIRCRAFT	
0/5/65	AIRCRAFT GENERAL	
	SECTION 1	EQUIPMENT Emergency Equipment - Sparsely Settled Areas Life Preserving Equipment - Over Water Operations Hand Fire Extinguishers for Use in Aircraft Anti-Collision Lights Use of High Visibility Paint on Aircraft Emergency Exit Lighting Lights - Aircraft Aircraft Compasses Flying Control Locks Fuel Selectors - Beechcraft 18 Aircraft
	SECTION 2	OPERATING REQUIREMENTS Operating Requirements for Agricultural Aircraft Stall Characteristics of the Douglas DC-3 Consolidated Canso Aircraft Aircraft Fuel Fuel Handling Use of Alcohol in Fuel Systems Aircraft Loading Computations - Weight and Balance Report - Loading Guide Average Passenger Weights Identification of Aircraft Regulations Concerning Water for Drinking and Culinary Purposes on Aircraft Quarantine and Sanitary Measures - Communicable Diseases
	SECTION 3	MISCELLANEOUS Canadian Airworthiness Council Introduction of Journey Log Books and Aircraft Technical Logs Aircraft and Pilot Log Books - Time Keeping Servicing and Inspection Private Aircraft

AIRCRAFT LICENSING

0/33/64	Aircraft Registration - Export - Import - Ferry Permits Procedures Governing the Certification of Aircraft in Canada Ultra-Light Aircraft Registration - Operating Restrictions
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AIRMANSHIP

0/27/64	SECTION 1	TAKE-OFF AND LANDING Pilot Vital Action Check Lists Flying Operations in Mountainous Regions Use of Highways for Landing and Taking-Off of Aircraft The Effect of Temperature and Altitude on Aircraft Performance
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	Doors Opening in Flight
	Cross-Wind Landing Limitations - Light Aircraft
	Landing Technique and Safety
	Landing Seaplanes Under Glassy Water Conditions or Skiplanes on Unbroken Snow
	White-Out
	Winter Operations - Take-Off
	Safety Precautions to Prevent Misreading Altimeters (Amended by 0/8/66)
	Communications Facilities
	Reporting of Runway Visual Range
SECTION 2	ENROUTE HAZARDS
	Domestic Pilot Reports - "PIREPS"
	Use of Railroads, Roads, Rivers, Powerlines, Pipelines etc. as Navigational Aids
	Restricted Flight Visibility - Control Zones
	Visual Look-Out - Vicinity of Airports
	Flight in Rain
	Turbulence in the Wake of Aircraft (Amended by 0/7/66)
	Ice Falling from Aircraft
	Dry Ice - Safety Precautions
	Potential Hazard - Portable Combustion Heaters
	High Altitude Flight in Aircraft with Non-Pressurized Cabins
SECTION 3	SPECIAL OPERATING PROCEDURES
	Winter Operations - Wheel-Equipped Light Aircraft
	Use of Seaplanes on Snow Surfaces
	Single-Engined Aircraft Operating in Northern Canada
	Operating Requirements for Seaplanes with External Loads
	Operating Requirements for Civil Aircraft Employed on Parachute Jumping Activities within Canada
	Control of Flight Tests
	Air Shows
	Intentional Spinning Practice
	Simulated Engine Failure
	Health Hazards Associated with Crop Dusting and Spraying Operations
0/2/65	MISUSE OF RADAR VECTORS - HAZARD TO FLIGHT
0/7/65	TRANS-OCEANIC FLIGHT - SINGLE-ENGINE AIRCRAFT
	Pilot Qualifications
	Aircraft Airworthiness
	Life Saving Equipment
	Aircraft Instruments and Equipment
	Aircraft Radio Communication Equipment
	Aircraft Navigation Equipment
0/6/66	PROCEDURES FOR USE OF RUNWAY VISUAL RANGE (Amended by 0/26/66)
0/7/66	TURBULENCE IN THE WAKE OF AIRCRAFT
0/8/66	MAJOR "ERRORS" OF THE PRESSURE ALTIMETER
0/9/66	MEDICATION AND FLYING
0/13/66	AMENDS PAGE 2 AND PAGE 18 OF INFORMATION CIRCULAR 0/27/64
0/26/66	PROCEDURES FOR USE OF RUNWAY VISUAL RANGE

COMMERCIAL OPERATIONS

0/6/65	SECTION 1	STANDARDS - OPERATION OF AIRCRAFT - SCHEDULED AIR SERVICES
		Definitions
		General
		Flight Operations
		Aircraft Instruments and Equipment
		Aircraft Radio Equipment
		Aircraft Maintenance
		Aircraft Flight Crew
		Manuals, Logs and Records
		Aircraft Operating Limitations
	SECTION 2	STANDARDS - OPERATIONS OF AIRCRAFT - NON-SCHEDULED AIR SERVICES
		General
		Flight Operations
		Aircraft Instruments and Equipment
		Aircraft Radio Equipment
		Aircraft Maintenance
		Aircraft Flight Crew
		Manuals, Logs and Records
		Aircraft Operating Limitations
	SECTION 3	Manuals
		Flight and Flight Duty Times
		Carriage of Cargo in Passenger Compartments

CUSTOMS AND IMMIGRATION

0/5/68	CUSTOMS CLEARANCE PROCEDURES AND AUTHORIZED CANADIAN AERODROMES OF ENTRY AND EXIT (With Errata)
	Customs Notification Requirements
	Special Service and Transportation Charges
	Formalities on Landing
	Formalities on Departure
	Licensing Requirements for Visiting Pilots
	Canadian and United States "ADCUS" Airports
	Authorized Canadian Customs Airports and Aerodromes of Entry and Exit (Amended by Errata)

FEES AND CHARGES

0/6/67	AIR SERVICES FEES REGULATIONS (Amended by 0/8/68)
	Interpretation
	Application
	Landing Fees
	Telecommunication Service Fee
	General Terminal Charge
	Aircraft Parking Charge
	Hangar Storage Charge
	Goods Storage Charge
	Payment of Fees and Charges
	Removal of Aircraft or Goods
	Exemptions
SCHEDULE A	FLYING CLUB OR COMMERCIAL FLYING SCHOOL
	Landing Fees
SCHEDULE B	DOMESTIC FLIGHT
	Landing Fees

SCHEDULE C	INTERNATIONAL FLIGHT Landing Fees
SCHEDULE D	TRANS-OCEANIC FLIGHT Landing Fees
SCHEDULE E	CANADIAN STATIONS OPERATING IN THE INTERNATIONAL AERONAUTICAL TELECOMMUNICATIONS SERVICE
SCHEDULE F	GENERAL TERMINAL CHARGES
SCHEDULE G	AIRCRAFT PARKING CHARGES elsewhere than in a Hangar
SCHEDULE H	HANGAR STORAGE CHARGES
SCHEDULE I	GOODS STORAGE CHARGES

0/8/68 AIR SERVICES FEES REGULATIONS (Amends 0/6/67)

FLIGHT CREW LICENCES

0/22/63 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES
Citizenship
Education
Tests and Examinations
Admission to Written Examinations
Admission to Flight Tests
Flight Tests

DETAILED REQUIREMENTS

APPENDIX A	The Glider Pilot Licence
APPENDIX B	The Private Pilot Licence
APPENDIX C	The Commercial Pilot Licence (Amended by 0/23/66)
APPENDIX D	The Senior Commercial Pilot Licence
APPENDIX E	The Airline Transport Pilot Licence
APPENDIX F	The Flight Navigator Licence
APPENDIX G	The Flight Engineer Licence

0/10/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES

APPENDIX H Student Gyroplane Pilot Permit and Gyroplane
Pilot Licence - Ultra-Light Gyroplanes

0/17/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES

APPENDIX I Student Free Balloon Pilot Permit and Free Balloon Pilot Licence

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- SECTION 2 GROUND HAZARDS
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0/21/64 PERSONNEL LICENSING - LICENCES AND ENDORSEMENTS
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Licence Renewal Certificate
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Gliders and Glider Pilots - Operation and Licensing (Amended by 0/3/66)
Alternate Endorsement of Landplane or Seaplane Authority on Pilot Licences
(Transferred to and superseded by 0/10/67 Training)
Type Endorsement of Aircraft above 12,500 pounds on Pilot Licences
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Recognition of Pilot Licences Issued by Contracting States (For Tourist Purposes)
Pilot Licences - Personnel Canadian Armed Services
Medical Standards - Amputation Cases
Caution to Flight Crew Personnel (Blood Donations and Drugs)

0/3/66 GLIDERS AND GLIDER PILOTS - OPERATION AND LICENSING
Tow Pilot Qualifications

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0/3/68 THE INSTRUMENT RATING
Conditions of Issue and Renewal
Instrument Training
Instrument Practice
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General Information
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MEDICAL

0/11/66 CIVIL AVIATION MEDICAL ADVISORY PANEL

0/2/68 MEDICAL EXAMINERS
List of DOT Appointed Medical Examiners in Canada
List of DOT Appointed Medical Examiners Outside Canada

RADIO

0/11/67 NAVIGATIONAL AIDS AND AIR/GROUND COMMUNICATIONS

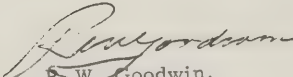
- SECTION 1 NAVIGATIONAL AIDS
 - VOR Test Facilities - Omnitest (VOT)
 - ILS Identifiers
 - ILS Glide Path Modulation
 - ILS Localizer - Interference
 - Aircraft Navigational Equipment - Interference
- SECTION 2 AIR/GROUND COMMUNICATIONS
 - Calling Procedures - Radio Telephone
 - Phonetic Alphabet
 - VHF Aeronautical Frequency Plan
 - Communications Principles - Canadian Trans-Atlantic Operations
 - Use of Frequency 5680 kHz
 - Use of Frequency 122.9 MHz
 - Addressing of Messages Originating in Aircraft

SEARCH AND RESCUE

- 0/31/64 SEARCH AND RESCUE
 - The Canadian Forces Search and Rescue Service
 - SARAH Beacon - Operating Instructions and Procedures
 - Aircraft Marking
 - Ground Air Visual Signal Code
 - Search and Rescue - Standard Procedure for Pilots
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- APPENDIX I Interception Signals
- APPENDIX II MAP - Canadian Forces Search and Rescue Service

TRAINING

- 0/10/67 TRAINING PERSONNEL LICENSING
 - Assistance for Flying Training
 - Approved Course of Commercial Pilot Training
 - Instrument Flying Training
 - Alternate Endorsement of Landplane or Seaplane
 - Authority on a Pilot Licence
- 0/18/66 DUAL CONTROL AIRCRAFT - OPERATION AND CREDITING OF FLIGHT TIME


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



General Publications

0/10/68
3rd September

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

GENERAL (Amending Information Circular 0/30/64)

DELETIONS:

Pages 13, 14, 15 and 16 of Information Circular 0/30/64 are to be deleted in their entirety.

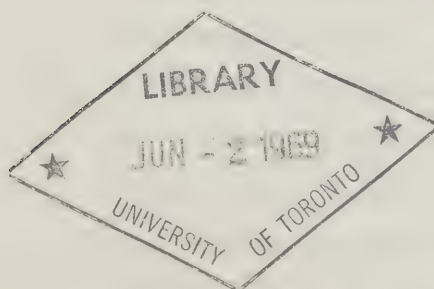
INSERTIONS:

The attached amendment to Information Circular 0/30/64 is issued as replacement pages and the information contained therein is to be effective August 1st, 1968.

Changes are marked by a vertical line in the margin.

INK CORRECTION:

On CONTENTS page of Information Circular 0/30/64; under Section IV, third item: delete words EASTERN CANADA.



R. W. Goodwin
(R. W. Goodwin),
Director, Civil Aviation.

- (2) Details of the report to be confirmed by the pilot by collect telegram to the nearest Regional Director, Air Services immediately after landing, - the telegram to be in the same form as the verbal report outlined in section 1;
- (3) A full written narrative report amplifying the telegraphic report, to be made by the pilot to that Regional Director, Air Services within seven days;
- (4) Air Traffic Control Action.

The agency receiving the radio report of an incident is to transmit the details immediately to the appropriate ATC centre, where the following immediate action will be taken;

- (i) where the reported and reporting aircraft are both military, details of the incident will be forwarded to the nearest Rescue Co-ordination Centre of the RCAF,
 - (ii) where the reported and reporting aircraft are both civil, details of the incident will be forwarded to the nearest Regional Director, Air Services,
 - (iii) where both military and civil aircraft are involved, both the nearest Rescue Co-ordination Centre and the nearest Regional Director, Air Services will be informed,
 - (iv) the ATC centre will add any pertinent information that concerns the reported incident;
- (5) Regional Directors, Air Services action.

Regional Directors, Air Services will be responsible for the delegation of a member of their staff to conduct the investigation of an incident. All Regions will be issued with detailed instructions on the conduct of these investigations;

- (6) Where an incident occurs within twenty-five miles of the next point of intended landing, the initial report may be made by telephone if circumstances make it inconvenient to report immediately by radio. However, the telegraphic and written reports will still be required;
- (7) Pilots involved in air incidents may expect to be interrogated as soon as practicable after the incident occurs. It must be impressed on all concerned that speed is the essence of a successful investigation, and only reports received within seven days of the occurrence of an incident will be investigated.

APPENDIX "A"

- A Incident Report
- B Name of person reporting incident
- C Type and identification his aircraft
- D Position, Altitude, Flight condition his aircraft
- E Date and time of incident
- F Location - include distance and direction from known fix
- G Altitude of reported aircraft
- H Weather vicinity of incident
- I Type, markings and other details reported aircraft
- J Details of Incident including proximity, manoeuvre, etc.

Sample of Verbal Report

- A Incident Report
- B John Doe

APPENDIX "A" (Cont'd)

- C Lockheed 1808 CF-XYZ
- D 3 miles each of Stirling NDB 5000 feet ASL between layers
- E 10th March, 1412 EST
- F 10 miles east of Stirling NDB
- G 5000 feet ASL
- H 3500 feet broken visibility 3 miles light snow
- I Piper CF-ABC, Yellow and Red
- J CF-XYZ enroute Ottawa to Toronto encountered Piper CF-ABC approaching head on 10 miles east of Stirling NDB. Evasive action required to avoid collision.

WARNING TO PILOTS FLYING TO THE UNITED STATES

Prior to the commencement of a flight to the United States, all pilots and operators should acquaint themselves with the latest information regarding Airspace Reservations, Danger Areas, Warning Areas and Caution Areas along the proposed route.

Information regarding these areas is given in the FAA publication "Airman's Information Manual" and is kept up-to-date by Notices to Airmen. This information may be obtained from any FAA office.

ISSUE AND DISSEMINATION OF SIGMET INFORMATION

Information on specified significant inflight weather (SIGMET) in conformity with WMO and ICAO procedures will be issued by the following weather offices for their areas of forecast responsibility:

Vancouver	Toronto	Goose
Edmonton	Montreal	Regina
Halifax	Winnipeg	Gander

SIGMET information will also continue to be provided for the Gander Oceanic FIR and the Edmonton UIR.

The purpose of SIGMET information is to provide, in a form convenient for ground to air transmission, short-term notice of specified phenomena of special importance to aircraft in flight as follows: active thunderstorm areas; lines of thunderstorms; hurricanes; heavy hail; heavy turbulence; heavy icing; marked mountain waves; and, widespread sand/dust storms.

The foregoing list of phenomena which can be included in SIGMETS is restricted in accordance with international agreement in order that the warning value will not be undermined by too frequent issue. Thus, SIGMETS are pertinent to transport aircraft capable of IFR operation and also to light aircraft; however, there are phenomena important to light aircraft operations, such as areas of low ceilings, moderate icing, etc., that are not to be included in SIGMETS.

SIGMETS will automatically amend the outstanding aviation forecast for the period of the SIGMET, usually two to four hours.

SIGMETS will be transmitted in Canada on designated meteorological teletype circuits and local and field circuits to make them available at Aeradio Stations, Air Traffic Control units, airline dispatch offices and meteorological offices for relay as required to pilots in flight.

Subsequently, SIGMETS will be distributed to international meteorological authorities in accordance with ICAO Regional plans.

Aeradio stations situated within and on or about the periphery of the area covered by a particular SIGMET will disseminate this information to aircraft in flight by the following means, (1) broadcast on

navigational aids voice channels immediately upon receipt; (2) inclusion in twice hourly scheduled broadcasts for the duration of the valid period; (3) directed transmission to specific aircraft when considered appropriate by the Aeradio Station operator; (4) normal air/ground communication channels on request of air crew.

MARSHALLING SIGNALS - AIRCRAFT

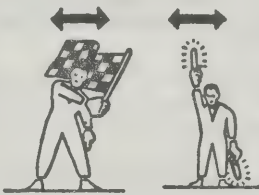
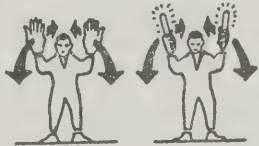


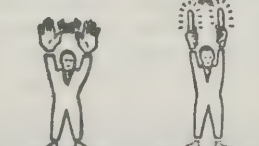
In order to standardize signalling between ground and flight personnel in aircraft, when required for aircraft entering, departing or manoeuvring within the movement area of an aerodrome, the marshalling signals shown in Appendix I and II, shall be used.


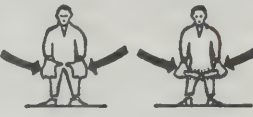

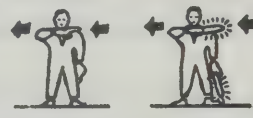





The signals are designed for use with the signalman facing an aeroplane in a position forward of the left wingtip in full view of the pilot or, in the case of a helicopter, in a position forward of the helicopter within full view of the pilot.

The meaning of these signals remains the same if bats, illuminated wands or flashlights are held.

Appendix I

AEROPLANES

<p>1. To proceed under further guidance by signalman.</p> <p>Signalman directs pilot if traffic conditions on aerodrome require this action.</p>	
<p>2. Move ahead.</p> <p>Arms a little aside and repeatedly moved upward-backward, beckoning onward.</p>	
<p>3. a) Turn to your left</p> <p>Right arm downward, left arm repeatedly moved upward-backward. Speed of arm movement indicating rate of turn.</p>	
<p>3. b) Turn to your right</p> <p>Left arm downward, right arm repeatedly moved upward-backward. Speed of arm movement indicating rate of turn.</p>	
<p>4. Stop.</p> <p>Arms repeatedly crossed above head (the rapidity of the arm movement should be related to the urgency of the stop, i.e. the faster the movement the quicker the stop).</p>	

<p>5. Start engines.</p> <p>Circular motion of right hand to head level with left arm pointing to engine.</p>	
<p>6. a) Insert chocks</p> <p>Arms down palms facing inwards swing arms from extended position inwards.</p>	
<p>6. b) Chocks away</p> <p>Arms down palms facing outwards swing arms outward.</p>	
<p>7. Cut motors.</p> <p>Either arm and hand level with shoulder, hand across throat, palm downward.</p>	
<p>8. Slow down.</p> <p>Arms down with palms toward ground, then moved up and down several times.</p>	
<p>9. Slow down motor(s) on indicated side.</p> <p>Arms down with palms toward ground, then either right or left hand waved up and down indicating that left or right side motor(s) respectively should be slowed down.</p>	
<p>10. Move Back.</p> <p>Arms by sides, palms facing forward, swept forward and upward repeatedly to shoulder height.</p>	
<p>11. a) Turns while backing.</p> <p>for tail to starboard; point left arm down, and right arm brought from overhead, vertical position to horizontal forward position, repeating right arm movement.</p>	
<p>11. b) Turns while backing.</p> <p>for tail to port; point right arm down, and left arm brought from overhead, vertical position to horizontal forward position, repeating left arm movement.</p>	



0/11/68
16th September

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 2

REPORTING OF FIREBALL AND METEORITE OBSERVATIONS (Superseding Information Circular 0/24/64)

The National Research Council is currently conducting a detailed study of meteorites. In this connection, they are making a concerted effort to collect data on meteorites that have fallen to earth and meteor sightings which might lead to the finding of meteorites (fragments or pieces of meteors which have fallen to earth). A great deal of useful scientific information can be obtained from this source particularly if early recovery is made. The co-operation of flight personnel in reporting sightings that might lead to the recovery of a meteorite would be appreciated.

As a guide in determining what meteor sightings will be of scientific value, two categories "Shooting STARS" and "Fireballs" may be used.

Faint meteors, commonly called "Shooting Stars", can be observed many times on any clear night but reports of their sightings are of little use since they will normally burn up in the atmosphere and not fall to earth.

"Fireballs" might be described as spectacular meteors, brighter than the brightest planet, of sufficient brilliance, in fact, to cast shadows and may be accompanied or followed by a "sonic boom" type of noise. They are usually seen moving rapidly across the sky and sometimes a trail of glowing particles is left behind. The meteor may explode with a burst of light and a loud sound several times during a single fall. The National Research Council Committee is anxious to receive reports of such sightings with as little delay as possible.

"Fireball" sightings made in flight may be reported after landing, to Aeradio, Meteorological and Air Traffic Control units or mailed (postage free) to:

Meteor Centre,
National Research Council,
Building M-58, Montreal Road Labs.,
Ottawa 7, Ontario, Canada.

All reports should include as much of the following information as is relevant,

- (a) Date and time of sighting (GMT to be used)
- (b) Condition of sky (clear, cloudy, haze, etc.)
- (c) Location of observer (either precise position on ground or geographical reference)
- (d) Occurrence of bursts (number and approximate position along path)
- (e) Luminosity (brightness compared to planets or moon and occurrence of shadows cast by nearby objects, if any)
- (f) Colour (distinguish between colour of fireball and any persistent train or trail after passage of fireball)

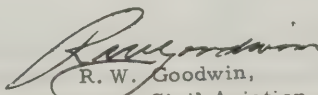
- (g) Form (size in relation to moon, and shape)
- (h) Duration (both of fireball in motion and persistent train or trail in the sky)
- (i) Sounds (description of sound and time interval between sighting the fireball and hearing the sound)
- (j) Position in sky (positions of beginning and end of fireball path, both azimuth and elevation)
- (k) Any other unusual observations.

NOTE: Item (j) is of prime importance for tracking down meteorites.

Should an observer feel that a specific sighting might be of more than usual significance, (i.e., observed to hit the earth) he may contact the nearest regional representative of the Associate Committee on Meteorites direct. The regional addresses are as follows:

Maritimes	-	Prof. R.H. MacNeill, Acadia University, Wolfville, N. S.
Quebec	-	Mr. Wm. A. Warren, 30 - 52nd Avenue, Lachine, Que.
Ontario	-	Royal Astronomical Society of Canada, 252 College Street, Toronto 2B, Ontario. Meteor Centre, National Research Council, Building M-58, Montreal Road Labs., Ottawa 7, Ontario.
Manitoba	-	Prof. E.I. Leith, University of Manitoba, Winnipeg, Manitoba.
Saskatchewan		Mr. John V. Hodges, 1554 Elphinstone Street, Regina, Saskatchewan.
Alberta	-	Prof. R.E. Folinsbee, University of Alberta, Edmonton, Alberta.
British Columbia	-	Dr. W.F. Slawson, University of British Columbia, Vancouver, B. C.

Since the primary objective in gathering reports of fireball sightings is to determine the area from which meteorite particles may be quickly recovered, the Committee is also interested in receiving reports of the finding of meteorites. Literature which will be of some assistance in identifying meteorites is available in Air Traffic Control Units, Aeradio Stations, Marine Radio Stations, and Meteorological Offices. Reports of findings and if the finder wishes, the meteorite fragment, should in all cases be sent by mail directly to the Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario. In this regard it should be noted that meteorites are not dangerously radio active and may be handled without special precautions once they have cooled to normal temperature. The Geological Survey of Canada will pay \$100.00 or more for the first specimen of any Canadian meteorite that is acquired for the National Meteorite Collection.


R. W. Goodwin,
Director, Civil Aviation.



0-12-68



INFORMATION CIRCULAR

SEARCH & RESCUE



DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Search and Rescue

0/12/68
1st October 1968

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 11

SEARCH AND RESCUE

Superseding Information Circular 0/31/64

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1. The Canadian Forces Search and Rescue Service
2. Emergency Locator Beacons
3. Aircraft Marking
4. Ground Air Visual Signal Code
5. Search and Rescue - Standard Procedure for Pilots
6. Radar Assistance to Aircraft
- Appendix I Interception Signals
- Appendix II MAP - Canadian Forces Search and Rescue Service

.....2

1. THE CANADIAN FORCES SEARCH AND RESCUE SERVICE

- 1.1 The Canadian Forces is the responsible agency in Canada for coordinating and operating a Search and Rescue service. The service is available 24 hours per day in all parts of Canada. It is equipped not only to conduct searches but to provide complete rescue service including trained parachute rescue personnel who can render first aid and supply any necessary emergency supplies. Its personnel are specially equipped to provide ground parties that can traverse any terrain in order to affect rescue.
- 1.2 This service is provided through four Search and Rescue Coordinating Centres located at Vancouver, Winnipeg, Trenton and Halifax. These centres have direct control of all rescue units in their area and have a vast communications network of civil and military facilities at their disposal.
- 1.3 Effective use of the specialized search and rescue equipment which is available requires the fullest cooperation of all aircraft owners and operators. By eliminating wrong search areas and avoiding unnecessary delays the chances of a successful search are increased. Follow the rules listed below and you can be sure of assistance when it is needed.
 - 1.3.1 Always File a Flight Plan or Flight Notification regardless of the weather along the route of flight or of the area in which the flight will be conducted. File the Flight Plan or Flight Notification with the appropriate Air Traffic Control Unit either directly or through an Aeradio Station, an Airport Manager's Office or through a Canadian Forces Flying Control Unit. If communication facilities are inadequate to permit the filing of a Flight Plan or Flight Notification with Air Traffic Control either directly or through another agency then file a Flight Notification with a responsible person. A Flight Plan or Flight Notification must contain the information required by the Flight Plans and Flight Notifications Order, (Air Navigation Order, Series V, No. 4).
 - 1.3.2 Always Follow a Flight Plan or Flight Notification once it is filed to preclude a search in the wrong area.
 - 1.3.3 Always Close a Flight Plan or Flight Notification promptly to preclude a "false" incident which could deprive someone who really needs assistance from obtaining it.
 - 1.3.4 Carry the Emergency Equipment detailed in the Flight Precautions in Sparsely Settled Areas Order (Air Navigation Order, Series V, No. 12) on all flights conducted within sparsely settled areas. It is strongly advocated that an emergency locator beacon capable of transmitting on 121.5 MHz and/or 243.0 MHz be carried during any flight in this area.
 - 1.3.5 If you Crash Land in uninhabited terrain, stay by your aircraft.
 - 1.3.6 Build a Smoke Fire as soon as possible after crash landing. Light and maintain it as circumstances dictate (see 2.5.1., Note 2.5.4).
 - 1.3.7 Use your Emergency Locator Beacon as directed in Chapter 2.
 - 1.3.8 Use Aircraft Radio if it is serviceable but not until you are overdue and know a watch is being kept for messages from you. Short rather than long messages will save batteries. Use the distress signal times, 15 and 45 minutes after each hour for 3 minutes duration. Your best chance of being heard is probably at night (less traffic, better reception). If you know your position, or approximate position and broadcast it, so much the better. Remember that SAR aircraft can home on VHF transmissions.
- 1.4 Advise Search and Rescue is an important rule for operators and owners to remember. As soon as information is received that an aircraft is overdue, immediately alert the nearest Search and Rescue Coordinating Centre giving all the known details of the incident. Do not conduct a small scale private search first since such action could deprive those in need of assistance at a time when it is needed most. The following are the Canadian Forces Rescue Coordinating Centres complete with telephone numbers:

Vancouver Rescue Coordinating Centre - Vancouver 733-9111
Winnipeg Rescue Coordinating Centre - Winnipeg 832-1311
Trenton Rescue Coordinating Centre - Trenton 392-3511
Halifax Rescue Coordinating Centre - Halifax 422-9311

- 1.5 In order to become more fully informed about the work of the Canadian Forces Search and Rescue Service and how it can help persons in distress, the Canadian Forces invites interested persons to visit the nearest Rescue Coordinating Centre and get acquainted.
2. Emergency Locator Beacons
- 2.1 There are several types of electronic search beacons. Those designed for civil use should operate on V. H. F. distress frequency of 121.5 MHz and/or 243.0 MHz.
- 2.2 Based on the method of operation, these beacons can be divided into two broad categories: the Crash Position Indicator (CPI) and the Personal Locator Beacon (PLB). The CPI is attached to the aircraft structure and is designed so that the impact of a crash will cause it to operate automatically; some have an additional automatic jettison capability, initiated by the crash impact, which ensures the beacon will survive in conditions of complete structural disintegration or fire. The PLB is a small portable beacon which has to be manually operated by the survivor. It should be noted that most CPIs also have the capability of being operated manually either in the air or on the ground.
- 2.3 Within these categories emergency beacons can be further classified according to the type of signal emission: pulse or continuous wave (CW). The ICAO standard recommends that emergency beacons be CW; this type of signal can be received by any aircraft having the appropriate V. H. F. receiver frequency. Pulse beacons, such as SARAH, require a special receiver which is carried only by Canadian Forces Search and Rescue aircraft.
- 2.4 The Search and Rescue aircraft of the Canadian Forces can home on either pulse or CW beacons and will maintain this capability while the older pulse type beacons are still in general use.
- 2.5 Operating Instructions and Procedures
- Each make of beacon has its own specific operating instructions which should be followed when activating the beacon. However, there are a number of considerations which must be taken into account by the survivor before he uses a PLB.
- 2.5.1 The most important consideration is that of when to turn on the PLB. This will vary with the situation and the survivor will have to use his own judgement in many cases. For instance, if operating on a flight notification you should delay turning on the beacon for 48 hours. Aircraft operating on a flight notification are not reported as being overdue until 24 hours after ETA; and a further delay of 24 hours will ensure that SAR aircraft are in the area and on search. If operating on a flight plan in controlled airspace, allow sufficient time after the calculated time of expiry of your fuel for a SAR aircraft to reach the area before activating the beacon. This calculation should assume a 30 minute reaction time factor at the SAR unit and an enroute cruise speed from the nearest SAR unit of 140 knots. SAR units are located at Summerside P. E. I., Trenton Ontario, Winnipeg Manitoba, and Comox B. C.
- 2.5.2 Search aircraft conducting an electronic search will normally commence search at your last known position (LKP) and fly along your intended track to the intended destination at 10,000 feet. At this altitude effective scanning range can be assumed to be a minimum of 30 nautical miles either side of track. On reaching the destination the aircraft will then reverse course and fly parallel to your intended track at a distance of 60 nautical miles to the LKP and then shift to the other side of the track a distance of 60 nautical miles and repeat the procedure. When two aircraft are available each side of the track will be swept simultaneously at 60 nautical mile intervals. If this coverage is ineffective, the areas of highest probability will be covered and recovered, reducing the sweep distance each time by half the former distance, until such time as the downed aircraft is located or it is calculated that the batteries of the beacon have been exhausted.
- 2.5.3 In deciding to activate the PLB, weather conditions should not normally be considered a factor; electronic search can be done in almost any weather, with the search aircraft flying on instruments.

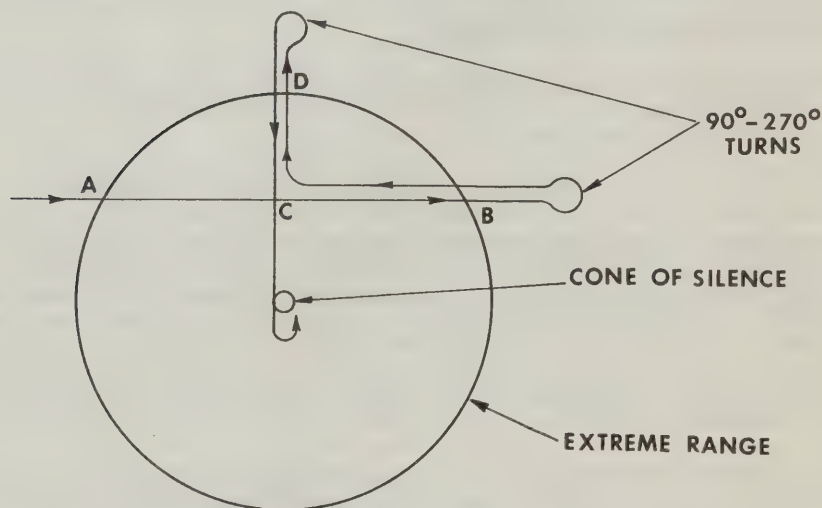
- 2.5.4 When the PLB is activated, it should be left on continuously and placed as high above the ground as possible. The maximum effective range results when the beacon is placed 10 feet or more above ground level.

Note: Do not hesitate to activate your beacon if you see or hear an aircraft as the crew may be aware that you are missing and be listening out on 121.5 MHz or 243.0 MHz. Any pilot operating in an area where a SAR operation is in progress should monitor 121.5 MHz and/or 243.0 MHz as much as is practicable.

2.6 Homing Procedure

In the event that an aircraft equipped with a CPI or carrying a PLB is missing, you may be requested to listen out on 121.5 MHz in an attempt to pick up emergency signal emissions. The tone of the distress signals may vary, however all are readily recognizable by the unusual pitch, which rises and falls with a rapid, steady beat.

- 2.6.1 If you receive a signal from an emergency beacon you should note the time when it was first received, your heading, and the time when it disappeared. This information should be passed to the nearest Rescue Coordinating Centre or search aircraft by the most rapid means available.
- 2.6.2 If you have the necessary time and fuel available, you may wish to attempt a homing on the signal. This can be done fairly accurately, without a VHF homer, by using the procedure shown in the diagram below.



The outer circle represents the extreme range at which the beacon can be heard. The time taken for the aircraft to fly from point A to point B is measured. The aircraft then turns through 180° and flies back to the halfway position at C. At this point the aircraft turns through 90° right or left - it does not matter which - and this course will bring it to point D or to the cone of silence. Point D is characterized by a gradual diminution of signal while at the cone of silence the signal falls from strong to weak in a matter of seconds. If point D is reached, a further turn through 180° will set course for the beacon and its cone of silence. The cone of silence may be narrowed by gradually descending as it is approached.

3. AIRCRAFT MARKING

3.1 The Search and Rescue Division of the Canadian Forces has requested that light aircraft, unless of unpainted reflecting construction, display large portions of wings and fuselage in vivid colours. The colours should provide the best possible opportunity of being seen from the air by personnel in searching aircraft.

3.2 High visibility paint is particularly good for marking aircraft to make them more conspicuous.

4. GROUND AIR VISUAL SIGNAL CODE

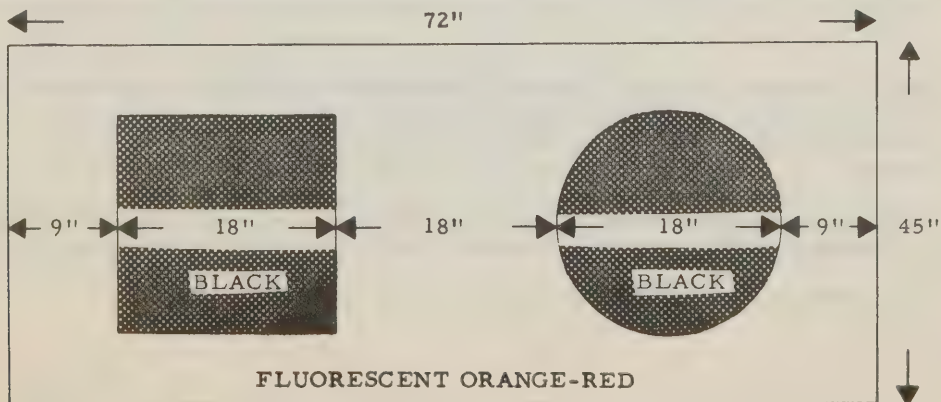
4.1 In accordance with international agreement, the following signals are to be used by survivors for the purpose of communicating with aircraft from the ground, when an emergency exists:-

No	Message	Code Symbol	No	Message	Code Symbol
1	Require doctor - serious injuries	I	10	Will attempt take-off	▷
2	Require medical supplies	II	11	Aircraft seriously damaged	◻
3	Unable to proceed	X	12	Probably safe to land here	△
4	Require food and water	F	13	Require fuel and oil	L
5	Require firearms and ammunitions	∨	14	All well	LL
6	Require map and compass	◻	15	No	N
7	Require signal lamp with battery and radio	I	16	Yes	Y
8	Indicate direction to proceed	K	17	Not understood	JL
9	Am proceeding in this direction	↑	18	Require engineer	W

4.2 As far as possible, symbols should be not less than eight feet and care should be taken to lay them out exactly as depicted to avoid confusion with other symbols. As much colour contrast as possible between material used and the background should be provided. Every effort should be made to attract attention by other means, such as radio, flares, smoke or reflected light.

4.3 Private signals from operators to their own aircraft and pilots should be of such a nature as NOT to conflict with the above, which are for use by all persons in case of emergency, only.

4.4 Distress, Urgency and Safety Signals may be found in Air Navigation Order, Series V, No. 6. Pilots should also be familiar with the following distress signal which may be used by small boats. The signal consists of a rectangular cloth panel, fluorescent orange-red in colour, on which a black square and disc are displayed.



5. SEARCH AND RESCUE, STANDARD PROCEDURE FOR PILOTS

5.1 PROCEDURES FOR PILOTS-IN-COMMAND OBSERVING AN ACCIDENT

- 5.1.1 When a pilot-in-command, on an international flight over water, observes that either another aircraft or a surface craft is in distress, he shall unless he is unable, or, in the circumstances of the case, considers it unreasonable or unnecessary;
- (a) keep in sight the craft in distress until such time as his presence is no longer necessary or until he is no longer able to remain in the vicinity of the distressed craft;
 - (b) if his position is not known with certainty, take such action as will facilitate the determination of it;
 - (c) report to the rescue co-ordination centre or air traffic service unit as much of the following information as possible:
 - type of craft in distress; its identification and condition;
 - it's position, expressed in geographical co-ordinates or in distance and true bearing from a distinctive landmark;
 - time of observation expressed in GMT on the 24 hours system;
 - number of persons observed;
 - whether persons have been seen to abandon the craft in distress;
 - number of persons observed to be afloat;
 - apparent physical condition of survivors;
 - (d) act as instructed by the rescue co-ordination centre.
- 5.1.2 If the pilot-in-command of the first aircraft to reach the place of the accident is unable to establish communication with the rescue co-ordination centre or air traffic service unit, he shall take charge of activities of all other aircraft that arrive until such time as by mutual arrangement he hands over to that aircraft best able to provide communication in the prevailing circumstances.

5.2 PROCEDURES FOR A PILOT-IN-COMMAND INTERCEPTING A DISTRESS CALL AND/OR MESSAGE

- 5.2.1 Whenever a distress call and/or message is intercepted on radio telegraphy or radio telephony by a pilot-in-command of an aircraft, other than a search aircraft, he shall:
- (a) plot the position of the aircraft in distress if given;
 - (b) if possible take a bearing on the transmission;
 - (c) at his discretion, while awaiting instructions, proceed to the position given in the distress signal.

5.3 SIGNALS WITH SURFACE CRAFT

- 5.3.1 When it is necessary for an aircraft to direct a surface craft to the place where an aircraft or surface craft is in distress, the aircraft shall do so by transmitting precise instructions by any means at its disposal. If such precise instructions cannot be transmitted or when necessary for any other reason the instructions shall be given by using the procedure prescribed in 5.3.2.

NOTE - Normally a change of heading will be made by the surface craft as an acknowledgment that the direction has been received and will be complied with. If the surface craft is unable to comply it will so indicate by hoisting the international flag "N" or by other visual or radio means.

- 5.3.2 The following procedures performed in sequence by an aircraft shall mean that the aircraft is directing a surface craft towards an aircraft or a surface craft in distress:
- (a) circling the surface craft at least once;

- (b) crossing the projected course of the vessel close ahead at a low altitude, opening and closing the throttle or changing the propeller pitch;
- (c) heading in the direction in which the surface craft is to be directed.

Repetition of such procedures shall have the same meaning.

5.3.3 The following procedure performed by an aircraft shall mean that the assistance of the surface craft to which the signal is directed is no longer required:

- crossing the wake of the vessel close astern at a low altitude, opening and closing the throttle or changing the propeller pitch.

6. RADAR ASSISTANCE TO AIRCRAFT

6.1 Radar Assistance is available on a 24 hour basis to all aircraft within the limits of the Distant Early Warning Identification Zone (DEWIZ), and will render navigational advice when and where possible, but no responsibility for the direct control of aircraft is accepted. The Radar Assistance does not absolve the captain of an aircraft of the responsibility of complying with Air Traffic Control clearances or other required procedures.

6.1.1 INFORMATION THAT MAY BE PROVIDED BY THIS SERVICE IS AS FOLLOWS:

- (a) Track and groundspeed checks,
- (b) Position of the aircraft in latitude and longitude, or by bearing and distance from a known point,
- (c) Magnetic heading to steer and distance to the nearest aerodrome or other designated points,
- (d) Position of heavy cloud in relation to the aircraft.

6.2 It should be emphasized that only in the event of distress or emergency will continuous radar surveillance be provided en route civil aircraft.

6.3 THE PROCEDURE TO BE FOLLOWED FOR THE USE OF THIS SERVICE IS AS FOLLOWS:

- (a) Use VHF radio frequency 122.2 MHz.
- (b) Call "Radar Assistance",
- (c) The subsequent call sign of the ground station will be the call sign given by the ground radar station,
- (d) After communication has been established with ground radar station, request the service desired,
- (e) If normal air defence commitments preclude the granting of the radar assistance, the ground station will transmit the word "UNABLE" and no further explanation will be given,
- (f) Notes:
 - (i) All speeds given are in knots,
 - (ii) All distances given are in nautical miles,
 - (iii) Initial contact with Radar Assistance should be made at the highest practicable altitude,
 - (iv) All bearings and headings are given in degrees magnetic.

6.4 RADAR ASSISTANCE TO AIRCRAFT IN DISTRESS OR EMERGENCY

6.4.1 The Department of National Defence through the use of Radar is prepared to give assistance to civil aircraft operating within the limits of the Canadian Air Defence Identification Zones and which are in distress or emergency.

- 6.5 When an aircraft is lost, or a state of distress or emergency exists, and
- 6.5.1 BOTH TRANSMITTER AND RECEIVER IS FUNCTIONING --
- (a) Use VHF or UHF frequency 121.5 MHz or 243.0 MHz,
 - (b) Call "Radar Emergency" or "Mayday",
 - (c) The subsequent call sign of the ground station will be the call sign given by the ground radar station,
 - (d) After communication has been established with ground radar station, request the desired service giving nature of distress or emergency,
 - (e) Continuous radar surveillance may be requested and communication with ground radar station maintained.

Note: The aircraft requesting assistance may be instructed to fly a particular pattern. This is to aid the radar operator in identifying the aircraft.

- 6.5.2 IF RECEIVER ONLY IS OPERATING -- fly a triangular pattern to the RIGHT (see diagram 1). Hold each heading for 2 minutes, (one (1) minute for jet aircraft). Complete a minimum of 2 such patterns before resuming original heading and then repeat at 20 minute intervals.
- 6.5.3 IF TRANSMITTER AND RECEIVER ARE BOTH INOPERATIVE -- fly a triangular pattern to the left in the same manner as described in paragraph 6.5.2 (see diagram 2).



WITH RECEIVER
OPERATING ONLY

Diagram 1

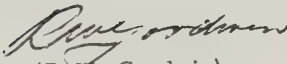


WITH TRANSMITTER
AND RECEIVER INOPERATIVE

Diagram 2

- 6.6 In the case where a RECEIVER only is operating, courses to steer to the nearest landing place or such other advice as circumstances may dictate will be given by radio on VHF (121.5 MHz) and UHF (243.0 MHz) and by the nearest radio range station to the aircraft. Aircraft having only radio range receivers should tune to the frequency of the nearest radio range station (i.e. the loudest) and swing i.e., oscillate the tuning dial about this frequency until it is certain that the receiver is accurately tuned. Failure to receive a message should not cause alarm as lack of compliance with broadcast instructions will be readily seen and action will be taken as set out in the following paragraph.
- 6.7 If both TRANSMITTER AND RECEIVER are inoperative, a Canadian Forces aircraft may intercept the aircraft in need of assistance and lead it to the nearest landing place. In this case, the INTERCEPTION SIGNALS described in Appendix I will be used.

- 6.8 If flying at a low altitude an attempt should be made to climb, as the greater the altitude of the aircraft, the better chance of its being detected.
- 6.9 If in a particular case it is not possible for the Canadian Forces to send out an intercepting aircraft, the flying of the triangular pattern will serve to position the distressed aircraft and thus narrow any field of search that may become necessary.
- 6.10 Unnecessary alerts have been caused by pilots flying in patterns similar to the triangular distress patterns. All pilots are therefore cautioned against any manoeuvres which might be taken by a Radar operator to mean a distress signal.

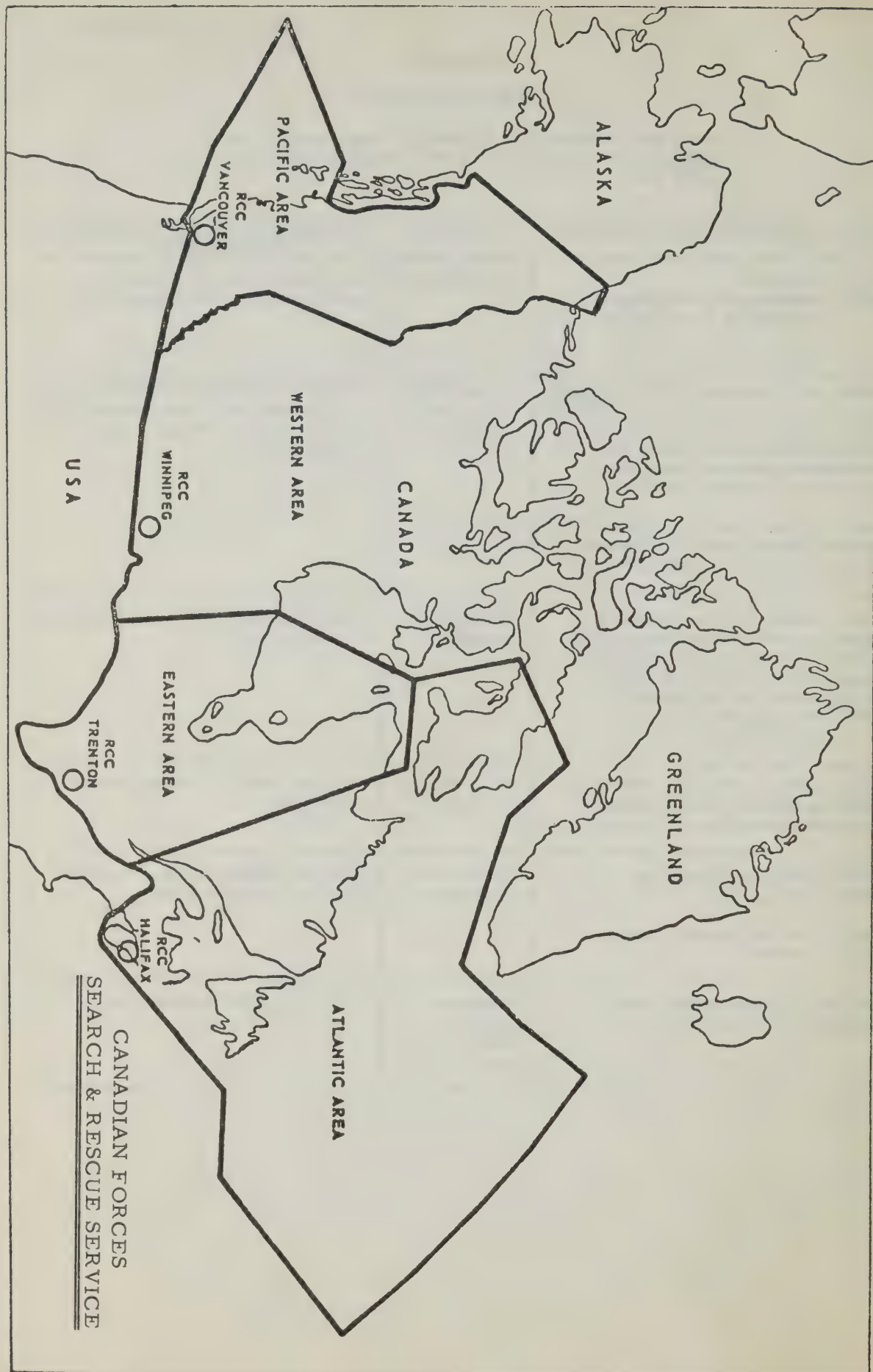

(R. W. Goodwin),
Director, Civil Aviation.

APPENDIX I

INTERCEPTION SIGNALS

Having been intercepted by a Canadian Forces aircraft, and being unable to communicate by radio, the following signals will be used:

SIGNAL BY INTERCEPTED AIRCRAFT	MEANING	RESPONSE BY CANADIAN FORCES INTERCEPTOR
DAY - Porpoising NIGHT - Switching on landing lights and holding steady beam.	"In Distress".	DAY or NIGHT - use appropriate interception signal as shown below.
SIGNAL BY CANADIAN FORCES INTERCEPTOR	MEANING	RESPONSE BY INTERCEPTED AIRCRAFT
DAY - Rocking wings from a position in front of intercepted aircraft and after acknowledgement a slow level turn on to the desired course. NIGHT - As day with the addition of a series of flashing lights at irregular intervals by any means available.	"Follow me".	DAY or NIGHT - Rocking wings and following.
DAY or NIGHT - If the intercepted aircraft is unable to maintain sufficient speed to follow the interceptor the interceptor will fly in the direction the intercepted aircraft should fly, circle to the <u>left</u> , and fly again in the proper direction.	"Fly in this direction".	Rocking wings, and maintain indicated direction.
DAY or NIGHT - When the area for descent is reached, the interceptor will circle to the <u>right</u> and descend.	"Descend in this area".	DAY or NIGHT - Rocking wings and following.
DAY - Circling aerodrome and lowering landing gear. NIGHT - As DAY showing steady lights if carried.	"Land at this aerodrome".	DAY or NIGHT - Same as interceptor, and proceed to land.
DAY or NIGHT - An abrupt break away upwards of 90° or more.	"Unable to assist you further - I must leave".	DAY or NIGHT Rocking of wings.



INFORMATION CIRCULAR



Summary

0/1/69
1st January

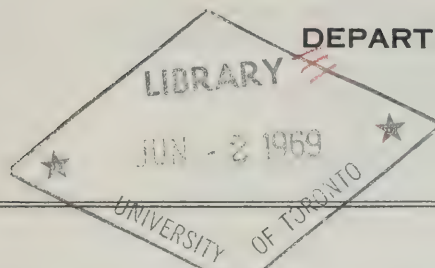
Government
Publications

DEPARTMENT OF TRANSPORT

AIR SERVICES

CIVIL AVIATION BRANCH

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INFORMATION CIRCULARS IN EFFECT - 1st JANUARY, 1969

1959	1964	1965	1966		1967	1968	
0/14/59	0/21/64	0/2/65	0/3/66	0/12/66	0/6/67	0/2/68	0/11/68
	0/22/64	0/5/65	0/6/66	0/13/66	0/9/67	0/3/68	0/12/68
1963	0/27/64	0/6/65	0/7/66	0/16/66	0/10/67	0/4/68	
	0/30/64	0/7/65	0/8/66	0/17/66	0/11/67	0/5/68	
0/22/63	0/33/64	0/13/65	0/9/66	0/18/66		0/6/68	
		0/16/65	0/10/66	0/23/66		0/8/68	
			0/11/66	0/26/66		0/10/68	

SPECIAL NOTICES

0/24/64 superseded by 0/11/68
 0/31/64 superseded by 0/12/68
 0/7/68 cancelled - time expired
 0/9/68 superseded by 0/1/69

AERODROMES

0/4/68	SECTION 1	LAND, WATER, ICE AND HELIPORTS Definitions Private Buoy Regulations Physical Characteristics of Aerodromes Visual Ground Aids (Day) Visual Ground Aids (Night) Use of Airport Lighting Equipment TOUCHDOWN ZONE AND CENTRELINE LIGHTING Runway Numbering Visual Approach Slope Indicator (VASI) Heliports
	SECTION 2	CONDITIONS FOR USE OF CERTAIN CIVIL AND MILITARY AERODROMES Use of Aerodromes by Aircraft Engaged in International Air Carrier Operations Use of Department of National Defence Aerodromes by Civil Aircraft USE OF DISTANT EARLY WARNING (DEW) LINE AERODROMES Use of Helicopter Landing Sites - Ontario.
0/6/68	TOUCHDOWN	ZONE AND CENTRELINE LIGHTING - COLOUR CODING TORONTO INTERNATIONAL AIRPORT

TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

AERONAUTICAL INFORMATION SERVICES

0/9/67	SECTION 1	AERONAUTICAL INFORMATION SERVICES AVAILABLE IN CANADA
	SECTION 2	DISTRIBUTION OF AERONAUTICAL PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM
	SECTION 3	CONTENTS OF AERONAUTICAL PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM
	SECTION 4	AERONAUTICAL CHARTS
	SECTION 5	SOURCES OF SUPPLY AND PRICES - CANADIAN AND FOREIGN PUBLICATIONS AND CHARTS

AIRCRAFT GENERAL

0/22/64	CARRIAGE OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES AND SUBSTANCES ON BOARD AIRCRAFT	
0/5/65	AIRCRAFT GENERAL	
	SECTION 1	EQUIPMENT Emergency Equipment - Sparsely Settled Areas Life Preserving Equipment - Over Water Operations Hand Fire Extinguishers for Use in Aircraft Anti-Collision Lights Use of High Visibility Paint on Aircraft Emergency Exit Lighting Lights - Aircraft Aircraft Compasses Flying Control Locks Fuel Selectors - Beechcraft 18 Aircraft
	SECTION 2	OPERATING REQUIREMENTS Operating Requirements for Agricultural Aircraft Stall Characteristics of the Douglas DC-3 Consolidated Canso Aircraft Aircraft Fuel Fuel Handling Use of Alcohol in Fuel Systems Aircraft Loading Computations - Weight and Balance Report - Loading Guide Average Passenger Weights Identification of Aircraft Regulations Concerning Water for Drinking and Culinary Purposes on Aircraft Quarantine and Sanitary Measures - Communicable Diseases
	SECTION 3	MISCELLANEOUS Canadian Airworthiness Council Introduction of Journey Log Books and Aircraft Technical Logs Aircraft and Pilot Log Books - Time Keeping Servicing and Inspection Private Aircraft

AIRCRAFT LICENSING

0/33/64	Aircraft Registration - Export - Import - Ferry Permits Procedures Governing the Certification of Aircraft in Canada Ultra-Light Aircraft Registration - Operating Restrictions
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AIRMANSHIP

0/27/64	SECTION 1	TAKE-OFF AND LANDING Pilot Vital Action Check Lists Flying Operations in Mountainous Regions Use of Highways for Landing and Taking-Off of Aircraft The Effect of Temperature and Altitude on Aircraft Performance
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	Doors Opening in Flight
	Cross-Wind Landing Limitations - Light Aircraft
	Landing Technique and Safety
	Landing Seaplanes Under Glassy Water Conditions or Skiplanes on Unbroken Snow
	White-Out
	Winter Operations - Take-Off
	Safety Precautions to Prevent Misreading Altimeters (Amended by 0/8/66)
	Communications Facilities
	Reporting of Runway Visual Range
SECTION 2	ENROUTE HAZARDS
	Domestic Pilot Reports - "PIREPS"
	Use of Railroads, Roads, Rivers, Powerlines, Pipelines etc. as Navigational Aids
	Restricted Flight Visibility - Control Zones
	Visual Look-Out - Vicinity of Airports
	Flight in Rain
	Turbulence in the Wake of Aircraft (Amended by 0/7/66)
	Ice Falling from Aircraft
	Dry Ice - Safety Precautions
	Potential Hazard - Portable Combustion Heaters
	High Altitude Flight in Aircraft with Non-Pressurized Cabins
SECTION 3	SPECIAL OPERATING PROCEDURES
	Winter Operations - Wheel-Equipped Light Aircraft
	Use of Seaplanes on Snow Surfaces
	Single-Engined Aircraft Operating in Northern Canada
	Operating Requirements for Seaplanes with External Loads
	Operating Requirements for Civil Aircraft Employed on Parachute Jumping Activities within Canada
	Control of Flight Tests
	Air Shows
	Intentional Spinning Practice
	Simulated Engine Failure
	Health Hazards Associated with Crop Dusting and Spraying Operations
0/2/65	MISUSE OF RADAR VECTORS - HAZARD TO FLIGHT
0/7/65	TRANS-OCEANIC FLIGHT - SINGLE-ENGINE AIRCRAFT
	Pilot Qualifications
	Aircraft Airworthiness
	Life Saving Equipment
	Aircraft Instruments and Equipment
	Aircraft Radio Communication Equipment
	Aircraft Navigation Equipment
0/6/66	PROCEDURES FOR USE OF RUNWAY VISUAL RANGE (Amended by 0/26/66)
0/7/66	TURBULENCE IN THE WAKE OF AIRCRAFT
0/8/66	MAJOR "ERRORS" OF THE PRESSURE ALTIMETER
0/9/66	MEDICATION AND FLYING
0/13/66	AMENDS PAGE 2 AND PAGE 18 OF INFORMATION CIRCULAR 0/27/64
0/26/66	PROCEDURES FOR USE OF RUNWAY VISUAL RANGE

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Flight Operations
Aircraft Instruments and Equipment
Aircraft Radio Equipment
Aircraft Maintenance
Aircraft Flight Crew
Manuals, Logs and Records
Aircraft Operating Limitations
- SECTION 2 STANDARDS - OPERATIONS OF AIRCRAFT - NON-SCHEDULED AIR SERVICES
General
Flight Operations
Aircraft Instruments and Equipment
Aircraft Radio Equipment
Aircraft Maintenance
Aircraft Flight Crew
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- SECTION 3 Manuals
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- 0/5/68 CUSTOMS CLEARANCE PROCEDURES AND AUTHORIZED CANADIAN AERODROMES OF
ENTRY AND EXIT (With Errata)
- Customs Notification Requirements
Special Service and Transportation Charges
Formalities on Landing
Formalities on Departure
Licensing Requirements for Visiting Pilots
Canadian and United States "ADCUS" Airports
Authorized Canadian Customs Airports and Aerodromes
of Entry and Exit

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Telecommunication Service Fee
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Landing Fees

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SCHEDULE D	TRANS-OCEANIC FLIGHT Landing Fees
SCHEDULE E	CANADIAN STATIONS OPERATING IN THE INTERNATIONAL AERONAUTICAL TELECOMMUNICATIONS SERVICE
SCHEDULE F	GENERAL TERMINAL CHARGES
SCHEDULE G	AIRCRAFT PARKING CHARGES elsewhere than in a Hangar
SCHEDULE H	HANGAR STORAGE CHARGES
SCHEDULE I	GOODS STORAGE CHARGES

0/8/68 AIR SERVICES FEES REGULATIONS (Amends 0/6/67)

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	Education
	Tests and Examinations
	Admission to Written Examinations
	Admission to Flight Tests
	Flight Tests

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APPENDIX B	The Private Pilot Licence
APPENDIX C	The Commercial Pilot Licence (Amended by 0/23/66)
APPENDIX D	The Senior Commercial Pilot Licence
APPENDIX E	The Airline Transport Pilot Licence
APPENDIX F	The Flight Navigator Licence
APPENDIX G	The Flight Engineer Licence

0/10/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES

APPENDIX H	Student Gyroplane Pilot Permit and Gyroplane Pilot Licence - Ultra-Light Gyroplanes
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0/17/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES

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0/23/66 CONDITIONS OF ISSUE AND RENEWAL - FLIGHT CREW LICENCES
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	Game Regulations - Province of Manitoba
	Fur Farms
	Caribou Herds
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	Fire Detection - Northern Areas
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	Protection of Wild Life

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0/13/65 FINDING THE SUN'S TRUE BEARING (SIMPLIFIED METHOD)

0/16/65 CONSERVATION LAWS
California Bighorn Sheep - British Columbia

0/12/66 INFORMATION CONCERNING THE CONDUCT OF SCATANA TESTS

0/10/68 AMENDS INFORMATION CIRCULAR 0/30/64

0/11/68 REPORTING OF FIREBALL AND METEORITE OBSERVATIONS

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- 0/21/64 PERSONNEL LICENSING - LICENCES AND ENDORSEMENTS
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(Transferred to and superseded by 0/10/67 Training)
Type Endorsement of Aircraft above 12,500 pounds on Pilot Licences
Commercial Pilot Licence Valid for Day Flying Only
Recognition of Pilot Licences Issued by Contracting States (For Tourist Purposes)
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- 0/3/66 GLIDERS AND GLIDER PILOTS - OPERATION AND LICENSING
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- 0/3/68 THE INSTRUMENT RATING
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Instrument Practice
Instrument Standards
General Information
The Flight Test

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0/11/66 CIVIL AVIATION MEDICAL ADVISORY PANEL

0/2/68 MEDICAL EXAMINERS
List of DOT Appointed Medical Examiners in Canada
List of DOT Appointed Medical Examiners Outside Canada

RADIO

0/11/67 NAVIGATIONAL AIDS AND AIR/GROUND COMMUNICATIONS

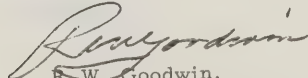
- SECTION 1 NAVIGATIONAL AIDS
 - VOR Test Facilities - Omnitest (VOT)
 - ILS Identifiers
 - ILS Glide Path Modulation
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- The Canadian Forces Search and Rescue Service
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 - Aircraft Marking
 - Ground Air Visual Signal Code
 - Search and Rescue - Standard Procedure for Pilots
 - Radar Assistance to Aircraft
- APPENDIX I Interception Signals
- APPENDIX II MAP - Canadian Forces Search and Rescue Service

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 - Approved Course of Commercial Pilot Training
 - Instrument Flying Training
 - Alternate Endorsement of Landplane or Seaplane
 - Authority on a Pilot Licence
- 0/18/66 DUAL CONTROL AIRCRAFT - OPERATION AND CREDITING OF FLIGHT TIME


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Publications

Radio

0/3/69
10th February

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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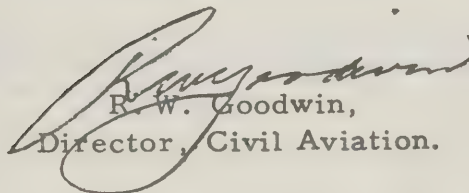
TACAN/VOR - ILS FREQUENCY PAIRING

(Supplementing Information Circular 0/11/67 pending publication in
Canada Air Pilot)

To facilitate the use of the DME function of TACAN facilities by civil aircraft equipped with VOR/DME equipment, the TACAN/VOR - ILS Frequency Pairing Plan on the reverse side of this sheet is provided for ready reference.

The distance measuring information is obtainable from a TACAN non co-located with VOR by selecting the corresponding VOR-ILS frequency shown in the Frequency Pairing Plan.




R. W. Goodwin,
Director, Civil Aviation.

FREQUENCY PAIRING PLAN

VOR - ILS (even) (odd) Frequency	TACAN Channel	VOR Frequency	TACAN Channel
108.0 MHz	17	112.0 MHz	57
108.1	18	112.1	58
108.2	19	112.2	59
108.3	20	112.3	70
108.4	21	112.4	71
108.5	22	112.5	72
108.6	23	112.6	73
108.7	24	112.7	74
108.8	25	112.8	75
108.9	26	112.9	76
109.0	27	113.0	77
109.1	28	113.1	78
109.2	29	113.2	79
109.3	30	113.3	80
109.4	31	113.4	81
109.5	32	113.5	82
109.6	33	113.6	83
109.7	34	113.7	84
109.8	35	113.8	85
109.9	36	113.9	86
110.0	37	114.0	87
110.1	38	114.1	88
110.2	39	114.2	89
110.3	40	114.3	90
110.4	41	114.4	91
110.5	42	114.5	92
110.6	43	114.6	93
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NOTE - TACAN channels assigned to ILS localizer frequencies (108.1 - 111.0) are for programmed ILS/DME installations.

INFORMATION CIRCULAR



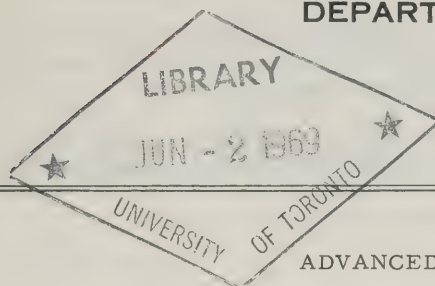
Government
Publications

Air Traffic Control

0/4/69
15th February

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH



Page 1 of 2

ADVANCED FLOW CONTROL PROCEDURES

(Supplementing NOTAM 4/67)

Advanced Flow Control Procedures (AFCPs) have been developed by the United States Federal Aviation Administration to provide its Air Traffic Control system and its users with some reasonable degree of arrival delay prediction. They are being implemented initially for the New York area airports, John F. Kennedy (JFK), La Guardia (LGA) and Newark (EWR), effective January 15th, 1969.

AFCP's are designed to:

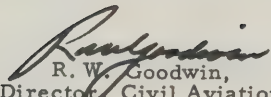
- (a) Hold aircraft on the ground at departure points to absorb arrival delay in excess of one hour.
- (b) Distribute delays equitably among all users.
- (c) Limit holding in New York Centre's area to one hour or less provided sufficient demand can be maintained on the ATC system to preclude gaps in the arrival sequence.
- (d) Eliminate enroute holding of traffic destined for Newark, La Guardia and Kennedy, in other than New York Centre's airspace.

Application of AFCP's will be based on the following:

- (a) Each IFR aircraft destined for Newark, La Guardia or Kennedy airport should file a flight plan so as to reach the departure Air Traffic Control Centre (ACC) at least 1 1/2 hours prior to the proposed departure time.
- (b) The departure ACC will assign a time of departure to each flight and advise the facility with which the flight plan was filed of this time at least one hour prior to the filed proposed departure time.
- (c) Pilots or operators must then call the facility with whom they filed and obtain their assigned time of departure.
- (d) Pilots will be expected to make good their assigned time of departure within plus or minus 15 minutes, unless otherwise instructed or restricted by ATC.
- (e) Upon receipt of an Advanced Flow Control Restriction (AFCR) message from the New York Centre, controllers of the concerned ACCs will notify their respective facilities that AFCRs are in effect for aircraft destined for Newark, La Guardia and Kennedy airports and specify ground delays as noted in the message. This early notification is designed to let operators be aware that they may experience a ground delay; specific delays will not be known until the assigned times of departure have been computed.

Montreal and Toronto Air Traffic Control Centres will participate in Advanced Flow Control Procedures. All aircraft destined for one of the three New York city airports that depart within the areas controlled by Toronto and Montreal ACCs may be affected.

In the interest of minimizing en route delays or eliminating intermediate landings which probably would otherwise be necessary, pilots and operators are urged to extend their cooperation in recognizing and complying with these procedures.

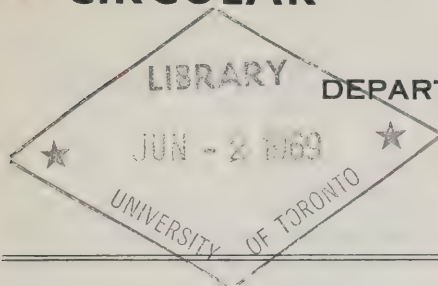

R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
Communications

0/5/69
17th February



DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 3

CONTINUING CERTIFICATE OF AIRWORTHINESS

1. GENERAL

Effective April 1, 1969 the Department of Transport will introduce new procedures in the certification of airworthiness of aircraft. These new procedures eliminate the necessity for an annual renewal and re-issue of the certificate of airworthiness. A new type of certificate of airworthiness will be issued which will remain in force subject to compliance with the requirements of Air Navigation Order, Series II, No. 4.

2. CONCEPT

The present system of issuing and renewing a certificate of airworthiness necessitating an annual application by an operator, is withdrawn. The present certificates with an expiry date will be replaced by a new certificate with an issue date.

The principal element of this concept will be a periodic aircraft inspection called a Condition and Conformity Inspection (CCI). This inspection is to be completed during the 60 day period prior to each anniversary of the date of issue of the new certificate of airworthiness in order to ensure continuing validity of that certificate, that the aircraft is airworthy and has been so certified.

The report and certification of this inspection is to be submitted on a mail-in type of form (Aircraft Condition and Conformity Report, form 24-0006), available from any regional office.

The CCI is to be completed by or under the supervision of:

- (a) the holder of a valid aircraft maintenance engineer licence endorsed for the class and type of aircraft being inspected, or
- (b) an approved inspector authorized to certify airworthiness on behalf of a company that has been approved for the maintenance, repair, overhaul or modification to aircraft of the class and type being inspected. Upon completion of the CCI, the aircraft maintenance engineer or approved inspector shall:

- (a) enter in the Technical Log a record of the maintenance work accomplished;
- (b) make a certification entry in the Aircraft Journey Log and Aircraft Technical Log;
- (c) record the required data and complete the certification in the CCI report.

A pilot, who is the holder of a valid licence endorsed for the class and type of aircraft being inspected, is to fly the aircraft within seven days of the airworthiness certification. On completion of the flight the pilot shall:

- (a) verify that the aircraft's performance, flying qualities and functions of control, power plant, landing gear, etc., are equivalent to the standard of the type; and
- (b) complete the certification in the CCI and enter the same certification in the Journey Log Book for that aircraft.

3. ELIGIBILITY

These procedures shall apply to all Canadian registered aircraft that are eligible for issue of a certificate of airworthiness.

4. INTRODUCTION OF PROCEDURES

All certificates of airworthiness which expire on or after April 1, 1969 will be replaced by a new type of continuing certificate of airworthiness. This new procedure will be implemented upon receipt of an application (accompanied by the CCI report and the applicable fee) to the regional office.

It is anticipated that existing certificates of airworthiness will be replaced by the new certificates during the period April 1, 1969 to April 1, 1970.

5. COMPLIANCE

The CCI of an aircraft may be undertaken 60 days prior to the anniversary of the date of issue of the certificate of airworthiness, therefore, such inspection may be initiated commencing February 1, 1969 for those aircraft whose present certificate of airworthiness expires on or after April 1, 1969.

6. FEES

A fee of \$20.00 is payable on application for the new type of continuing certificate of airworthiness.

Once the continuing certificate of airworthiness is issued the operator is not required to pay further annual renewal fees. However, if the operator fails to submit a CCI report the continuing certificate of airworthiness shall expire and in order to obtain a new certificate of airworthiness an application must be made and the standard fee of \$20.00 is payable for the issue of a new certificate of airworthiness with a new issue date.

7. NOTIFICATION OF CCI REPORT ACCEPTANCE

On receipt of a satisfactory CCI report by the regional office, the certificate of airworthiness is automatically valid to the next anniversary date of issue and no notice is sent to the operator or owner.

8. DURATION OF VALIDITY

A certificate of airworthiness will expire on an anniversary date unless a CCI report has been submitted prior to each anniversary of the date of issue.

A certificate of airworthiness is not in force during any period of maintenance, modifications, repairs or overhauls.

A certificate of airworthiness shall expire when an aircraft has been substantially damaged as defined in Air Navigation Order Series VIII, No. 1.

9. ADMINISTRATIVE PROCEDURE - IMPLEMENTATION

(a) Applicability

The new system becomes effective on April 1, 1969.

(b) Procedure

To effect the changeover the aircraft operator or owner shall ensure that:

- (i) a CCI is performed,
- (ii) a CCI report is completed and certified,
- (iii) the blue copy of the CCI report is retained for your records,
- (iv) an application is made to the regional office on application form 26-0024,
- (v) the application form, fee of \$20.00 and the white, pink and manilla copies of the CCI report form 24-0006 are submitted to the regional office,
- (vi) on receipt of the new certificate of airworthiness, the certificate is to be placed in your aircraft,
- (vii) the blue copy of the CCI report is filed in the aircraft Technical Log Book.

10. ADMINISTRATIVE PROCEDURE - ANNUAL

(a) Applicability

This procedure shall apply to aircraft that have been issued with a continuing type of certificate of airworthiness.

(b) Procedure

At any time during the 60 days before the anniversary of the date of issue of the certificate of airworthiness, perform a CCI and

- (i) complete and certify the CCI report Form 24-0006,
- (ii) retain the blue copy of the CCI report for your records,
- (iii) mail in the white, pink and manilla copy of the CCI to the regional office in which the aircraft is normally based,
- (iv) file the blue copy of the CCI in the Aircraft Technical Log Book.

11. ADMINISTRATIVE PROCEDURE - NEW AIRCRAFT


The owner or operator of new aircraft is to make application as prescribed in section 9 at any time after completion of a CCI.

12. ADMINISTRATIVE PROCEDURE - Aircraft with Expired or Cancelled Certificate of Airworthiness

In order to obtain re-issue of a certificate of airworthiness, the owner or operator of aircraft with an expired or cancelled certificate of airworthiness must make application as prescribed in section 9 at any time after completion of a CCI.

13. CCI REPORT PROCEDURES

The details of the CCI procedures are contained in a separate NAMEO bulletin to all aircraft maintenance engineers and aircraft operators and owners.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



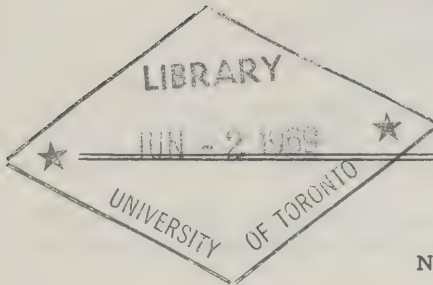
General Government
Publications

0/6/69
18th February

DEPARTMENT OF TRANSPORT

AIR SERVICES
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TRANS CANADA (McKEE) TROPHY

NOMINATION INFORMATION AND FORMAT

The Trans Canada (McKee) Trophy which was presented by the late James Dalzell McKee, as a memorial of the first trans-continental seaplane flight made in September of 1926, is, in theory, to be awarded each year for the encouragement of Canadian aviation in accordance with the principles outlined in the agreement and subject to the conditions of award as approved by the Minister of National Defence, the official trustee of the award.

Last year the conditions of award were updated and re-aligned with specific emphasis on air operations. The 1967 winner of the award was Lieutenant Colonel R. A. White for his achievement in setting a new Canadian altitude record of 100,110 feet in a CF104. In future, as was the case in 1967, the Trophy will be awarded on the basis of excellence in the field of flying operations.

The Conditions of Award are:

- (a) The recipient shall be one who is domiciled in Canada and who is identified with Canadian flying either military or civil.
- (b) Qualification as aircrew is a prior claim to consideration, but lack of such qualification does not exclude others from consideration providing they qualify in all other respects as included in these Conditions of Award.
- (c) Contributing to operations which advance the cause of aviation shall receive consideration over exploits of a dangerous nature serving no useful purpose.
- (d) Continuous performance throughout the year is worthy of consideration, however, the trophy is awarded primarily for recognition of an outstanding contribution or spectacular achievement in the field of Air Operations.
- (e) Pioneering of new areas of Aircraft Operations is to receive special consideration.

Nominations for the Trans Canada (McKee) Trophy are invited from all segments of Canadian Aviation, such as commercial and private operators, Government departments using aircraft, and the military. Also, any person who, in his opinion, has performed meritorious service, may forward his own name for consideration. Nominations will be solicited annually; however, if in the opinion of the Award Committee and with the agreement of the Minister of National Defence, the contributions of the nominees are not consistent with the stature and intent of the Award, no selection will be made for that year.

NOMINATION FORMAT

The following format is suggested for purposes of standardization of submissions and to ensure that each nominee receives full consideration:

Nominee

- Name in full.

Historical Facts

- Include birthplace, short resumé of education and training plus history of employment.

Association with Aircraft Operations

- Provide a resumé of the nominee's association with aircraft operations.

Details of Contribution or Achievement

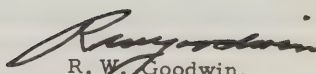
- Detailed description of contribution or operation achievement which is to be of primary consideration by the Award Committee. Additional operational contributions may be provided as supporting information.

Pioneering

- Examples of pioneering activities should be fully authenticated and supported with detailed description of the activity.

All organizations operating aircraft in Canada as well as interested individuals are urged to give this matter careful consideration and submit recommendations, thus ensuring that those taking an active part in the advancement of aviation in Canada are not overlooked.

Nominations for 1968 are to be forwarded directly to the Chairman, Trans Canada (McKee) Trophy Award Committee, Canadian Forces Headquarters, Department of National Defence, Ottawa 4, Ontario; Attention: DGOPSA, and are to be postmarked not later than March 15, 1969.

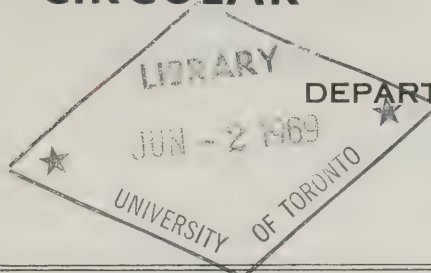

R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Government
General Publications

0/8/69
24th February



DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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UNITED NATIONS RHODESIA REGULATIONS


In order to fulfill Canada's obligation under the United Nations Charter, and since the United Nations has, by resolution dated May 29, 1968,

- (a) reaffirmed that the present situation in Rhodesia constitutes a threat to international peace and security; and
- (b) decided upon certain measures to be employed to give effect to its decisions in the resolution and has called upon all members of the United Nations to apply such measures,

the United Nations Rhodesia Regulations were passed on December 20, 1968. Of special interest to aviation industry are the following extracts:

- "10. No owner, operator or pilot-in-command of a Canadian aircraft shall knowingly carry, or cause or permit to be carried, on the aircraft, in Canada or any other place,
- (a) any goods produced or manufactured in Rhodesia and exported therefrom after the coming into force of these Regulations; or
 - (b) any goods (other than goods of the kind described in subsection (3) of section 3),
 - (i) that are loaded on the aircraft after the coming into force of these Regulations, and
 - (ii) that are for delivery to or bound for Rhodesia.
11. No owner, operator or pilot-in-command of a Canadian aircraft shall knowingly fly or allow that aircraft to be flown,
- (a) from Canada or any other place to Rhodesia, or
 - (b) from Rhodesia to any other place, except for the purpose of carrying goods of the kind described in subsection (3) of section 3.
12. No owner, operator or pilot-in-command of a Canadian aircraft shall, in Canada or in any other place, make or knowingly carry out any arrangement or agreement for coordinating any air transport services provided by the aircraft with any aircraft services provided by any aircraft registered in Rhodesia or owned by any person in Rhodesia."

A copy of the United Nations Rhodesia Regulations, which appeared in the January 8, 1969 issue of the Canada Gazette, Part II as SOR/69-14, may be obtained from the Queen's Printer, Publications Branch, Ottawa, Ontario, for the sum of .25¢.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Search and Rescue

0/9/69
3rd March

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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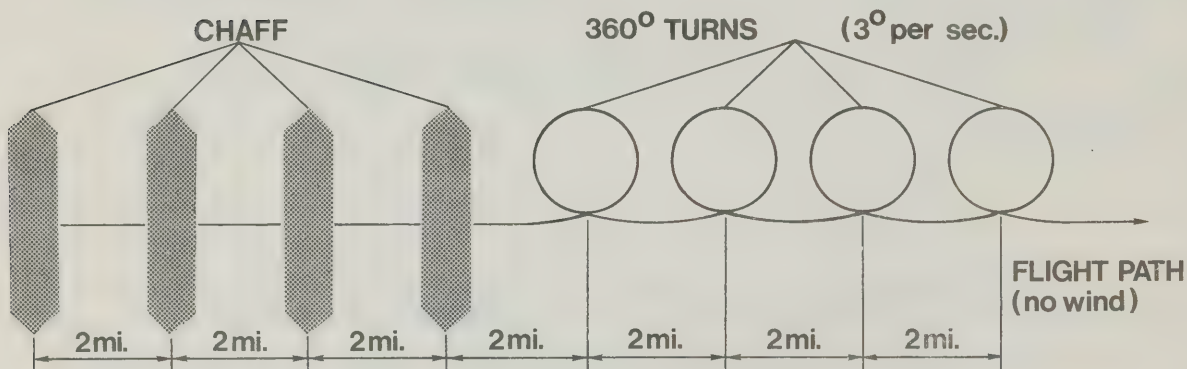
AIRBORNE EMERGENCY PROCEDURE (Supplementing Information Circular 0/12/68)

By permission of the Federal Aviation Administration, U.S. Department of Transportation, the following is reprinted and circulated for the information and guidance of all concerned.

1. To supplement other acceptable emergency procedures to alert Air Traffic Control of aircraft in distress, a procedure has been developed, primarily for light aircraft, using chaff as an emergency signal.
2. The left or right triangular pattern system has been in effect for many years with varying degrees of success. In recent years the increase in the number of aircraft flying and the corresponding increase in air traffic control, controller workload make it somewhat less likely that a radar controller will observe an emergency triangle. Also, small light aircraft possess a smaller degree of radar reflectivity, fly at lower altitudes where radar is less effective and usually are not equipped with beacon transponders. A means of target enhancement, designed primarily for light aircraft, has been developed and implemented by utilizing the principles of chaff.
3. Chaff was first used by the British during World War II as a confusion device to create false targets on enemy radar. This military application still exists and chaff bundles are also placed in parachutes and ejection seats to aid in the location of downed aircrews. The many thousands of strips contained in each packet cause a reflective cloud to appear on radar screens which remains visible as long as it is within radar coverage. The size of the "cloud" depends upon wind velocity, the speed of the aircraft which drops it, and the quantity of strips contained in the packet. The normal rate of fall for aluminum chaff is approximately 150 feet per minute when no thermals exist.
4. Chaff is strips of coated material, usually aluminum foil, cut to a specific length making them tuned dipole antennas which reflect radar energy. Chaff manufactured to be detected by A.T.C. airway and airport surveillance radar (AASR) is approximately four and one-half inches long and will reflect energy on frequencies from 1250 MHz to 1350 MHz. Chaff intended for use with airport surveillance radar (ASR) is approximately two inches long and covers the frequencies from 2700 MHz to 2900 MHz. The material is contained in a small box, approximately 3 x 5 x 1 inch in size, which holds about six ounces of chaff. Packets designed for use should have a quantity of both lengths necessary to cover AASR and ASR frequencies. The construction of the packet is such that after the pilot drops it from the aircraft the slipstream will open it and scatter the chaff. If the four packages of chaff are dropped at the correct interval, the initial result will be the appearance of four closely spaced targets resembling aircraft returns on the controller's presentation of primary radar.

5. The procedure for the use of chaff is as follows:

Fly a straight course, open and drop a box of chaff every two miles until four drops have been made. Continue on course for two miles and then make a 360° turn, at a rate of three degrees per second, to the left. Repeat the 360° turns at two-mile intervals until four turns have been completed. (See diagram). The chaff pattern will enhance the possibility of detection by the radar controller and will assist him in providing assistance.



6. Proper care of chaff packets is important and printed instructions should accompany them when they are purchased. Each strip has been coated to ensure dispersal and to prevent corrosion so there should be no deterioration. The three main points to remember are:

- (1) Do not let water freeze within the packet. Water, in itself, will not harm the chaff but ice in the packet will probably prevent proper scattering when it is dropped.
- (2) Do not compress the packet to the extent that the shape of the strips might be altered or matted. Each strip is made in a slight V shape to ensure the best reflectivity and ease of separation.
- (3) Do not open the packet prior to use. The packets are made to facilitate scattering by the slipstream and premature opening will probably allow spillage and loss of contents.

7. Chaff may be obtained from the following manufacturers:

DEMAC Manufacturing Company, Inc.,
45 Bloomingdale Road,
Hicksville, New York 11801,
U. S. A.

Lundy Electronics and Systems, Inc.
Glen Head, New York 11545,
U. S. A.

Aeromarine Sales,
1734 24th Avenue North,
St. Petersburg, Florida 33713,
U. S. A.

TRACOR Company, Inc.,
Austin Texas 78767,
U. S. A.

8. Pilots should never dispense chaff unless they are in distress and cannot make radio contact with a ground station or unless they are requested to do so. Indiscriminate drops could easily cause a hazardous situation by deteriorating the radar system or by initiating unwarranted rescue operations.

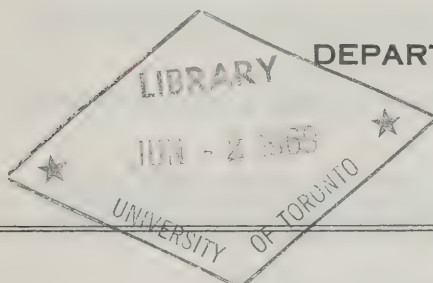
R. W. Goodwin
R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Aircraft Licensing Publications

0/10/69
6th March



DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 2

CERTIFICATE OF REGISTRATION - TRANSFER OF OWNERSHIP (Supplementing Information Circular 0/33/64)

The Air Regulations, with respect to the Certification of Aircraft, have been amended in order to enable a certificate of registration to remain valid upon completion of sale of an aircraft, and for a period thereafter not to exceed 30 days. The amendment becomes effective April 1, 1969.

To take advantage of this new procedure a new type of certificate of registration is required to be issued for the aircraft. The owner of a Canadian registered aircraft may request that he be issued with the new replacement certificate of registration by the Regional Office concerned by personal representation during normal working hours, or by mail. However, under such circumstances the registered owner must surrender his certificate of registration on application for the new certificate. Where an owner so elects, a new certificate may be issued without fee, even though the sale of his aircraft is not involved. Should the registered owner not elect to apply for a new certificate, his current certificate will continue to be valid.

The amended regulation permits the aircraft to be flown for a 30 day period following change of ownership of that aircraft and pending the issue of a new certificate of registration provided certain formalities are observed. In any event the validity of the certificate of registration will expire 30 calendar days from the date shown on the bill of sale. Owners would be well advised to make application for registration of their aircraft as soon as possible, after purchase, in order to ensure receipt of that certificate during the 30 day validity period.

The instrument to be used for this new procedure shall be the new "CERTIFICATE OF REGISTRATION OF AIRCRAFT" form (front) and the new "CERTIFICATE OF TRANSFER OF OWNERSHIP" (back) (in 2 parts). The complete form is numbered 26-0039(68) and is described as follows:

"Original Certificate of Registration of Aircraft - The white certificate shall remain in the aircraft while it is being flown, with one exception - it will be submitted by the new owner, along with other documents required for re-registration purposes. (The yellow and blue copies of this Certificate are for departmental use, only). The pink copy of the Certificate shall be kept in the aircraft with the white Certificate. When application for registration is made and the white Certificate is surrendered to the Department, the pink copy shall constitute a temporary certificate of registration and shall remain in that aircraft."

EXECUTION

The previous owner (or co-owner(s)) shall: -

- (a) complete and sign in the appropriate places Parts I and II of the CERTIFICATE OF TRANSFER OF OWNERSHIP.
- (b) mail, without delay, Part II of the CERTIFICATE OF TRANSFER OF OWNERSHIP (he now has no further responsibility for the operation of the aircraft).

The new owner (or co-owner(s)), shall: -

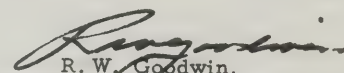
- (a) sign (in the appropriate places) Parts I and II of the CERTIFICATE OF TRANSFER OF OWNERSHIP.
- (b) ensure the white CERTIFICATE OF REGISTRATION and pink copy is retained on board the aircraft during flight.
- (c) when making application for re-registration, forward the white copy of CERTIFICATE OF REGISTRATION which includes (reverse side) the CERTIFICATE OF TRANSFER OF OWNERSHIP along with the application form, fee, bill of sale, etc. to an Air Services Regional Office.

This procedure does not apply in the case of a privately registered aircraft for which the owner requires commercial registration. The new owner should be aware that in this particular case his aircraft may only be flown for private purposes, until the aircraft is formally re-registered, since no Canadian registered aircraft shall be operated commercially unless it has been formally registered for commercial purposes.

If for any reason the new owner fails to re-register an aircraft within the 30 calendar day period following the change of ownership the certificate of registration shall lapse, effective the 31st day, and the aircraft may not therefore be flown legally, until a new certificate of registration is issued. Under such circumstances the new owner is required to file "Application for Registration of an Aircraft" in the usual way.

The vendor would be well advised, when transferring ownership under this new procedure to ensure that the new owner is eligible under Part II of the Air Regulations to be the owner of a Canadian registered aircraft.

Any further queries regarding the certificate of registration procedure should be directed to one of the Air Services Regional Offices located in Vancouver, Edmonton, Winnipeg, Toronto, Montreal and Moncton.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Aeronautical Information
Services

0/11/69
1 May

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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CIVIL AVIATION HANDBOOKS

Effective immediately automatic issue of the Information Circulars listed below is being discontinued preparatory to the reissue of this information in the form of separate Civil Aviation Handbooks to cover each general subject.

Aircraft Licensing

0/33/64	Aircraft Licensing
0/5/69	Continuing Certificate of Airworthiness
0/10/69	Certificate of Registration - Transfer of Ownership

Personnel Licensing

0/22/63	Conditions of Issue and Renewal
0/21/64	Licences and Endorsements
0/3/66	Amending 0/21/64
0/10/66	Supplementing 0/22/63
0/16/66	Amending 0/21/64
0/17/66	Supplementing 0/22/63
0/18/66	Supplementing 0/10/67
0/23/66	Amending 0/22/63
0/10/67	Training
0/3/68	The Instrument Rating

Commercial Operations

0/6/65	Commercial Operations
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Medical Examiners

0/2/68	Medical Examiners
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Fees and Charges

0/6/67	Air Services Fees Regulations
0/8/68	Amending 0/6/67


The Civil Aviation Handbooks which will supersede these Aeronautical Information Circulars will be made available in future by purchase. The availability and cost of each Handbook will be advertised by Information Circular as each is issued.



Until such time as the information contained in the Information Circulars listed above is published in the new Handbooks, holders of these Circulars should retain them as documents which henceforth will be known by Title only. The numbers by which these particular Circulars have been designated are cancelled as of this date.

During this interim period copies of these Information Circulars from remaining stock at Regional Offices and at Headquarters will be provided in response to requests for information which they contain.

It is emphasized that the information contained in each of the listed Green covered Booklets, and in the listed superseding and/or supplementing Circulars will remain valid until superseded by a Civil Aviation Handbook.


R. W. Goodwin,
Director, Civil Aviation.

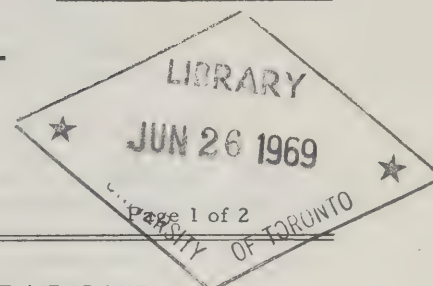
INFORMATION CIRCULAR



Airmanship

0/12/69
3rd June

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

THE EFFECT OF ICING ON PISTON ENGINES IN LIGHT AIRCRAFT

1. By permission of the Ministry of Aviation of the United Kingdom, the following is reprinted and circulated for the information and guidance of all concerned.
2. In certain meteorological conditions all piston engines are liable to be affected by icing in the induction system. In engines fitted with carburettors this icing can occur in conditions of high humidity at small throttle openings, even on warm days. With engines employing fuel injection systems, impact icing of the pressure sensing tubes may occur when flying in cloud at low temperatures. Both these conditions can result in a loss of power, or in power not being available when needed, unless precautionary measures are taken.
3. The following notes are intended as a general guide to assist pilots to avoid engine icing, but reference should also be made to the Engine Manufacturer's Operating Manual and Service Bulletins for specific drills related to a particular engine type.
4. Carburettor Icing
 - (A) Carburettor icing can occur during taxiing with small throttle settings, or when the engine is idling.
 - (B) With a fixed pitch propeller, a drop in RPM can be a good indication of carburettor icing, but with a constant speed propeller the loss of power could be serious before a drop in RPM occurs. A more positive indication would be a drop in manifold pressure, or loss of airspeed in level flight.
 - (C) Other than on take-off, hot air should be selected whenever a drop in RPM or manifold pressure is experienced, when icing conditions are suspected and when flying in conditions of high humidity with the outside air temperature within the range mentioned in para 4.(G). Unless expressly permitted in the instructions issued by the manufacturer, the continuous use of hot air should be avoided; it should be selected for sufficient periods of time to restore the engine power to the original level. If a loss of power is due to icing, and the use of hot air disperses it, re-selection of cold air should produce an increase in RPM or manifold pressure over the original reading. This is a useful check to see whether ice is forming. If it is, keep an eye on the engine instruments as it may recur. It should be noted that, on the other hand, if ice is not forming when the cold air intake is in use, changing to the heated intake will cause a significant loss of power, and increase in specific fuel consumption and no increase in RPM, or manifold pressure, beyond those obtained prior to the use of hot air, will be indicated when cold air is re-selected.

Note:

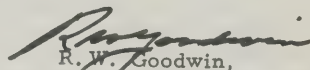
The use of hot air when ice is already present may temporarily make the situation appear worse, because of an increase in rough running. If this happens, the temptation to return to cold air should be resisted in order that the hot air may have time to clear the ice.

If no intake temperature gauge is fitted, partial hot air should not be used. The system should be either fully ON or OFF. Partial heat can cause carburettor icing because it may melt ice particles (which would otherwise pass into the engine without causing trouble) but not prevent the resultant moisture freezing when it passes through the carburettor.

- (D) Just prior to take-off, check that the induction hot air system is working correctly, i.e., check that there is a drop in power (RPM or manifold pressure) when hot air is selected, and that the power is regained when cold air is re-selected. Check that the full throttle RPM and manifold pressure are correct for the particular aircraft type. The RPM with a fixed pitch propeller will be less than the maximum RPM approved for the engine, but the relevant value should be known for each aeroplane. Check manifold pressure and RPM in the climb, and frequently during cruise, and select hot air if icing is suspected.
- (E) During let down, and approach to landing, owing to the small throttle settings, carburettor icing is possible, particularly in conditions of high humidity. The heat for the hot air system is derived from the engine which must, therefore, be kept warm by opening the throttle if necessary, if the system is to be effective.
- (F) It is important to remember that high relative humidity is one of the prime factors in carburettor icing. Pilots should therefore be constantly alert for the possibility of carburettor icing, and take the necessary corrective action before an irretrievable situation arises. Remember, if you have an engine failure due to carburettor icing the engine may not restart. Even if it does, there may well be delay which could be critical.
- (G) It should be noted particularly that carburettor icing does not occur only in cold weather. As mentioned in para 2 it can happen on warm days if the humidity is high (i.e., of the order of 60 per cent or more) and is then likely whenever the outside air temperature is within the range of 5°C (41°F) to 27°C (81°F). It can, in fact, occur at almost any air temperature IF THE HUMIDITY IS HIGH.

5. Fuel Injection Icing

- (A) Fuel injectors may not be subject to high humidity icing, as are carburettors, but they may be subject to impact icing when flying in cloud at low temperatures; under these conditions hot air should be selected.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Radio

0/13/69

9th June
Government
Publications

DEPARTMENT OF TRANSPORT

AIR SERVICES

CIVIL AVIATION BRANCH

Page 1 of 1

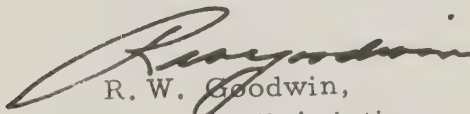


TRANSCRIBED WEATHER BROADCASTS

Continuous transcribed weather broadcasts are transmitted from the following stations:

Vancouver	266 kHz
Abbotsford	344 kHz
Toronto	368 kHz
Montreal	248 kHz

These broadcasts will contain information to pilots consisting of flight precautions, weather synopsis, significant enroute weather, upper winds, selected pilot reports, weather radar reports, hourly and special airport weather reports, terminal forecasts and selected NOTAM from stations located within an area of approximately 100 NM of the broadcast station.

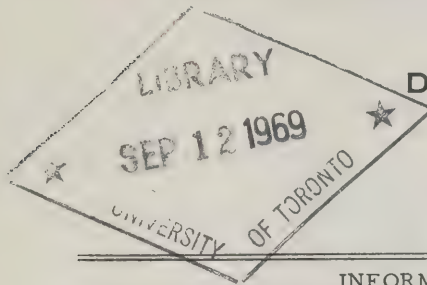

R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Summary

0/14/69
1st July



DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 5

INFORMATION CIRCULARS IN EFFECT - 1st JULY, 1969

1959	1965	1966	1967	1968	1969	
0/14/59	0/2/65	0/6/66	0/9/67	0/4/68	0/2/69	0/11/69
	0/5/65	0/7/66	0/11/67	0/5/68	0/3/69	0/12/69
1964	0/7/65	0/8/66		0/6/68	0/4/69	0/13/69
	0/13/65	0/9/66		0/10/68	0/7/69	
0/22/64	0/16/65	0/12/66		0/11/68	0/8/69	
0/27/64		0/13/66		0/12/68	0/9/69	
0/30/64		0/26/66				

SPECIAL NOTICES

NOTE: 1 The following Information Circulars, although still valid, have been amalgamated under one cover "AIRMANSHIP" (0/2/69).
0/27/64, 0/2/65, 0/7/65, 0/6/66, 0/7/66, 0/8/66, 0/9/66, 0/13/66, 0/26/66.

NOTE: 2 The following Information Circulars, although still valid, have been amalgamated under one cover "GENERAL" (0/7/69).
0/14/59, 0/30/64, 0/13/65, 0/16/65, 0/12/66, 0/10/68, 0/11/68.

NOTE: 3 Automatic issue of the Information Circulars listed in "AERONAUTICAL INFORMATION SERVICE" (0/11/69) has been discontinued, but as stated in that Circular, they are available on request, until such time as the Handbooks are published.

The following is a list of those Information Circulars referred to in this note:

0/22/63	to be included in Personnel Licensing Handbook
0/21/64	to be included in Personnel Licensing Handbook
0/3/66	to be included in Personnel Licensing Handbook
0/10/66	to be included in Personnel Licensing Handbook
0/16/66	to be included in Personnel Licensing Handbook
0/17/66	to be included in Personnel Licensing Handbook
0/18/66	to be included in Personnel Licensing Handbook
0/23/66	to be included in Personnel Licensing Handbook
0/10/67	to be included in Personnel Licensing Handbook
0/3/68	to be included in Personnel Licensing Handbook
0/33/64	to be included in Aircraft Licensing Handbook
0/5/69	to be included in Aircraft Licensing Handbook
0/10/69	to be included in Aircraft Licensing Handbook
0/6/65	to be included in Commercial Operations Handbook
0/11/66	to be included in Medical Information Handbook
0/2/68	to be included in Medical Information Handbook
0/6/67	to be included in Fees and Charges Handbook
0/8/68	to be included in Fees and Charges Handbook

NOTE: 4 0/1/69 superseded by 0/14/69
0/6/69 cancelled - time expired

AERODROMES

- 0/4/68 SECTION 1 LAND, WATER, ICE AND HELIPORTS
Definitions
Private Buoy Regulations
Physical Characteristics of Aerodromes
Visual Ground Aids (Day)
Visual Ground Aids (Night)
Use of Airport Lighting Equipment
Touchdown Zone and Centreline Lighting
Runway Numbering
Visual Approach Slope Indicator (VASIS)
Heliports
- SECTION 2 CONDITIONS FOR USE OF CERTAIN CIVIL AND MILITARY AERODROMES
Use of Aerodromes by Aircraft Engaged in International Air Carrier Operations
Use of Department of National Defence Aerodromes by Civil Aircraft
Use of Distant Early Warning (DEW) Line Aerodromes
Use of Helicopter Landing Sites - Ontario
- 0/6/68 TOUCHDOWN ZONE AND CENTRELINE LIGHTING - COLOUR CODING TORONTO
INTERNATIONAL AIRPORT

AERONAUTICAL INFORMATION SERVICES

- 0/9/67 SECTION 1 AERONAUTICAL INFORMATION SERVICES AVAILABLE IN CANADA
SECTION 2 DISTRIBUTION OF AERONAUTICAL PUBLICATIONS, INFORMATION
CIRCULARS AND NOTAM
SECTION 3 CONTENTS OF AERONAUTICAL PUBLICATIONS, INFORMATION
CIRCULARS AND NOTAM
SECTION 4 AERONAUTICAL CHARTS
SECTION 5 SOURCES OF SUPPLY AND PRICES - CANADIAN AND FOREIGN
PUBLICATIONS AND CHARTS
- 0/11/69 CIVIL AVIATION HANDBOOKS

AIR TRAFFIC CONTROL

- 0/4/69 ADVANCED FLOW CONTROL PROCEDURES

AIRCRAFT GENERAL

- 0/22/64 CARRIAGE OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES AND SUBSTANCES ON
BOARD AIRCRAFT
- 0/5/65 AIRCRAFT GENERAL
- SECTION 1 EQUIPMENT
Emergency Equipment - Sparsely Settled Areas
Life Preserving Equipment - Over Water Operations
Hand Fire Extinguishers for Use in Aircraft
Anti-Collision Lights
Use of High Visibility Paint on Aircraft
Emergency Exit Lighting
Lights - Aircraft
Aircraft Compasses
Flying Control Locks
Fuel Selectors - Beechcraft 18 Aircraft
- SECTION 2 OPERATING REQUIREMENTS
Operating Requirements for Agricultural Aircraft
Stall Characteristics of the Douglas DC-3
Consolidated Canso Aircraft
Aircraft Fuel
Fuel Handling
Use of Alcohol in Fuel Systems
Aircraft Loading Computations - Weight and Balance Report - Loading Guide
Average Passenger Weights
Identification of Aircraft
Regulations Concerning Water for Drinking and Culinary Purposes on Aircraft
Quarantine and Sanitary Measures - Communicable Diseases

SECTION 3 MISCELLANEOUS
Canadian Airworthiness Council
Introduction of Journey Log Books and Aircraft Technical Logs
Aircraft and Pilot Log Books - Time Keeping
Servicing and Inspection Private Aircraft

AIRMANSHIP

0/2/69 See NOTE 1 of this Circular

0/27/64 SECTION 1 TAKE-OFF AND LANDING
Pilot Vital Action Check Lists
Flying Operations in Mountainous Regions
Use of Highways for Landing and Taking-off of Aircraft
The Effect of Temperature and Altitude on Aircraft Performance
Doors Opening in Flight
Cross-Wind Landing Limitations - Light Aircraft
Landing Technique and Safety
Landing Seaplanes Under Glassy Water Conditions or Skiplanes on
Unbroken Snow
White-Out
Winter Operations - Take-Off
Safety Precautions to Prevent Misreading Altimeters (Amended by 0/8/66)
Communications Facilities
Reporting of Runway Visual Range

SECTION 2 ENROUTE HAZARDS
Domestic Pilot Reports - "PIREPS"
Use of Railroads, Roads, Rivers, Powerlines, Pipelines etc. as
Navigational Aids
Restricted Flight Visibility - Control Zones
Visual Look-Out - Vicinity of Airports
Flight in Rain
Turbulence in the Wake of Aircraft (Amended by 0/7/66)
Ice Falling from Aircraft
Dry Ice - Safety Precautions
Potential Hazard - Portable Combustion Heaters
High Altitude Flight in Aircraft with Non-Pressurized Cabins

SECTION 3 SPECIAL OPERATING PROCEDURES
Winter Operations - Wheel-Equipped Light Aircraft
Use of Seaplanes on Snow Surfaces
Single-Engined Aircraft Operating in Northern Canada
Operating Requirements for Seaplanes with External Loads
Operating Requirements for Civil Aircraft Employed on Parachute
Jumping Activities within Canada
Control of Flight Tests
Air Shows
Intentional Spinning Practice
Simulated Engine Failure
Health Hazards Associated with Crop Dusting and Spraying Operations

0/12/69 THE EFFECT OF ICING ON PISTON ENGINES IN LIGHT AIRCRAFT

0/2/65 MISUSE OF RADAR VECTORS - HAZARD TO FLIGHT

0/7/65 TRANS-OCEANIC FLIGHT - SINGLE-ENGINE AIRCRAFT
Pilot Qualifications
Aircraft Airworthiness
Life Saving Equipment
Aircraft Instruments and Equipment
Aircraft Radio Communication Equipment
Aircraft Navigation Equipment

0/6/66 PROCEDURES FOR USE OF RUNWAY VISUAL RANGE (Amended by 0/26/66)

0/7/66 TURBULENCE IN THE WAKE OF AIRCRAFT

- 0/8/66 MAJOR "ERRORS" OF THE PRESSURE ALTIMETER
- 0/9/66 MEDICATION AND FLYING
- 0/13/66 AMENDS PAGE 2 AND PAGE 18 OF INFORMATION CIRCULAR 0/27/64
- 0/26/66 PROCEDURES FOR USE OF RUNWAY VISUAL RANGE

CUSTOMS AND IMMIGRATION

- 0/5/68 CUSTOMS CLEARANCE PROCEDURES AND AUTHORIZED CANADIAN AERODROMES OF ENTRY AND EXIT (with Errata)

Customs Notification Requirements
Special Service and Transportation Charges
Formalities on Landing
Formalities on Departure
Licensing Requirements for Visiting Pilots
Canadian and United States "ADCUS" Airports
Authorized Canadian Customs Airports and Aerodromes of Entry and Exit

GENERAL

- 0/7/69 See NOTE 2 of this Circular
- 0/14/59 AVOIDANCE BY AIRCRAFT OF DOMINION RADIO ASTROPHYSICAL OBSERVATORY - PENTICTON, B. C.
- 0/30/64 GENERAL (Consolidation) (Amended by 0/10/68)
- SECTION 1 CONSERVATION LAWS
Game Regulations - Province of Manitoba
Fur Farms
Caribou Herds
Forest Fires
Fire Detection - Northern Areas
Travel Permit Regulations - Provinces of British Columbia, Saskatchewan, Ontario, Quebec and Nova Scotia
Protection of Wild Life
- SECTION 2 GROUND HAZARDS
Potential Hazard - Helicopter Rotor Blades
Use of Airborne Radar
Safety Precautions to Prevent Injury to Persons on the Ground
Safety Precautions - Starting and Running Aircraft Engines
- SECTION 3 SECURITY CONTROL
Interception of Civil Aircraft
Information Concerning the Conduct of ESCAT Rules (Supplemented by 0/12/66)
Vital Intelligence Sightings - Cirvis Reporting Procedures
- SECTION 4 MISCELLANEOUS
In-Flight Incident Reports
Warning to Pilots Flying to the United States
Issue and Dissemination of SIGMET Information - Eastern Canada
Marshalling Signals - Aircraft
Movement of Mail to Isolated Stations in the Canadian North
Distribution of Aircraft Reports
- 0/13/65 FINDING THE SUN'S TRUE BEARING (SIMPLIFIED METHOD)
- 0/16/65 CONSERVATION LAWS
California Bighorn Sheep - British Columbia

0/12/66 INFORMATION CONCERNING THE CONDUCT OF SCATANA TESTS
0/10/68 AMENDS INFORMATION CIRCULAR 0/30/64
0/11/68 REPORTING OF FIREBALL AND METEORITE OBSERVATIONS
0/8/69 UNITED NATIONS RHODESIA REGULATIONS

RADIO

0/11/67 NAVIGATIONAL AIDS AND AIR/GROUND COMMUNICATIONS

SECTION 1 NAVIGATIONAL AIDS

VOR Test Facilities - Omnitest (VOT)

ILS Identifiers

ILS Glide Path Modulation

ILS Localizer - Interference

Aircraft Navigational Equipment - Interference

SECTION 2 AIR/GROUND COMMUNICATIONS

Calling Procedures - Radio Telephone

Phonetic Alphabet

VHF Aeronautical Frequency Plan

Communications Principles - Canadian Trans-Atlantic Operations

Use of Frequency 5680 kHz

Use of Frequency 122.9 MHz

Addressing of Messages Originating in Aircraft

0/3/69 TACAN/VOR - ILS FREQUENCY PAIRING

0/13/69 TRANSCRIBED WEATHER BROADCASTS

SEARCH AND RESCUE

0/12/68 SEARCH AND RESCUE

The Canadian Forces Search and Rescue Service

Emergency Locator Beacons

Aircraft Marking

Ground Air Visual Signal Code

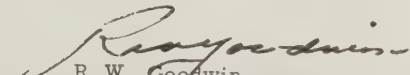
Search and Rescue - Standard Procedure for Pilots

Radar Assistance to Aircraft

APPENDIX I Interception Signals

APPENDIX II MAP - Canadian Forces Search and Rescue Service

0/9/69 AIRBORNE EMERGENCY PROCEDURE


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



General Government

Publications

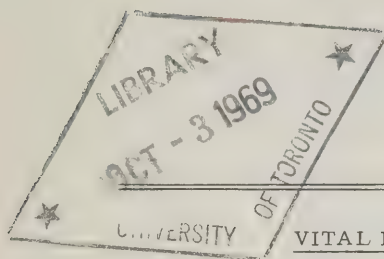
0/16/69

18th August

DEPARTMENT OF TRANSPORT

AIR SERVICES CIVIL AVIATION BRANCH

Page 1 of 3



VITAL INTELLIGENCE SIGHTING - CIRVIS REPORTING PROCEDURES

- NOTE 1: TO HOLDERS OF INFORMATION CIRCULAR 0/30/64 - This Information Circular supersedes that portion of 0/30/64 as published on Pages 10, 11 and 12.
- NOTE 2: TO HOLDERS OF INFORMATION CIRCULAR 0/7/69 - This Information Circular supersedes that portion of 0/7/69 as published on Pages 11, 12 and 13.

In order to extend the early warning coverage for the defence of the North American continent a plan has been developed for the reporting of vital intelligence sightings. Reports originating from airborne or land-based observers will be known as CIRVIS (pronounced SUR-VEES) messages.

Who Reports -

Pilots of all Canadian aircraft, air traffic controllers, aeradio operators, and other ground observers should originate CIRVIS reports as and when applicable.

When to Report -

- (1) CIRVIS reports should be made immediately upon vital intelligence sighting, except when originated by the pilot of an aircraft which is over a foreign country other than the U. S. , Greenland or Iceland.
- (2) When a situation previously reported changes sufficiently to warrant a supplementary or amplifying or cancellation report.
- (3) In the event a CIRVIS report from an aircraft cannot be made by radio; it should be filed immediately upon landing. Such reports should be made by the quickest available means.

To Whom to Report -

- (1) CIRVIS messages passed from an aircraft by radio should be transmitted to the nearest or most convenient Canadian or U. S. Government air traffic control facility or aeradio station. There is no need to address such messages as these facilities have detailed instructions for the delivery of CIRVIS messages.
- (2) When reports cannot be passed to the facilities listed above, they should be passed to the nearest Canadian or U. S. A. military or consular authority.
- (3) CIRVIS reports originated at an air traffic control or aeradio facility shall be passed in accordance with detailed instructions issued by appropriate authority.

What to Report -

(1) Ground observers, and pilots while airborne:

- (a) All airborne, waterborne and ground objects or activities which appear to be hostile, suspicious or unidentified.

Examples:

- (i) Guided missiles,
- (ii) Unidentified flying objects,
- (iii) Submarines,
- (iv) Surface warships positively identified as not Canadian or U. S. A. ,
- (v) Aircraft or contrails which appear to be directed against Canada, the U. S. A. , their territories or possessions,
- (vi) Nuclear bursts, or other violent explosions,
- (vii) Any unexplained or unusual activity which may indicate a possible attack against or through Canada, the U. S. A. , their territories or possessions; including the presence of any unidentified or other suspicious ground parties in Polar regions or other remote or sparsely populated areas.

(2) Pilots Upon Landing: -

- (a) Reports which for any reason could not be transmitted while airborne.
- (b) Unlisted airfields or facilities, weather stations or air navigation aids.
- (c) Post-landing reports.

Contents of Reports -

CIRVIS reports shall contain the following data, as applicable, in the order listed:

- (1) the word CIRVIS as the first word of the text
- (2) identification of the reporting aircraft or facility
- (3) the object or activity sighted. Give a brief description of the sighting which should contain the following items as appropriate.
 - (a) Number of aircraft, vessels, missiles, submarines, etc.
 - (b) Category of object, general description, etc., e.g., size, shape, type of propulsion, etc.
- (4) the position of the object or activity indicated by any of the following methods:
 - (a) Latitude and longitude,
 - (b) Over a radio fix,
 - (c) True bearing and distance from a radio fix,
 - (d) Over a well-known or well-defined geographic point,
 - (e) True bearing and distance from a geographic point.
- (5) Date, and time of sighting expressed in GMT;
- (6) Altitude of object; may be expressed as low, medium or high;
- (7) Direction of travel of the object;
- (8) Speed of the object;
- (9) Any observed identification, insignia or other significant information.

Every reasonable effort should be made to positively identify the object sighted. CIRVIS reports should not be delayed due to lack of data for any of the above items.

How to Report -

- (1) Air Traffic Control and Aeradio personnel shall originate and/or pass CIRVIS reports in accordance with instructions issued by appropriate authority.
- (2) When calling a ground station to pass a CIRVIS message the pilot of an aircraft should precede the call by the word CIRVIS (pronounced SUR VEES) spoken three times as a priority indicator. If this priority indicator does not produce satisfactory precedence the International Urgency Signal may be used.

Example of Call -

CIRVIS CIRVIS CIRVIS - GOOSE RADIO THIS IS AIR CANADA FIVE ZERO FIVE -
CIRVIS REPORT - OVER.

Examples of CIRVIS Initial Report -

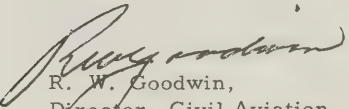
CIRVIS AIR CANADA FIVE ZERO FIVE SIGHTED FORMATION OF SIX JET BOMBERS
CONFIGURATION IS SWEEP WING WITH EIGHT JET ENGINES TWO ZERO ZERO
MILES EAST OF CAPE HARRISON AT ONE THREE ONE THREE FIVE ZERO ZULU
ALTITUDE THREE FIVE THOUSAND HEADING TWO SEVEN ZERO DEGREES NO
MARKINGS OBSERVED - OVER.

Supplementary or Amplifying Reports -

CIRVIS AIR CANADA FIVE ZERO FIVE SIX JET BOMBERS PREVIOUSLY REPORTED
AT ONE THREE ONE THREE FIVE ZERO ZULU NOW ONE THREE ZERO MILES
WEST OF CAPE HARRISON AT ONE THREE ONE FOUR THREE FIVE ZULU HEADING
TWO THREE FIVE DEGREES - OVER.

Cancellation Report -

CIRVIS AIR CANADA FIVE ZERO FIVE CANCEL CIRVIS REPORT OF ONE THREE
ONE THREE FIVE ZERO ZULU SIX JET BOMBERS POSITIVELY IDENTIFIED AS
AIR FORCE BRAVO FOUR SEVENS AT ONE THREE ONE FOUR FOUR SIX ZULU -
OVER.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Air Traffic Control

0/17/69
15th September

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Document
Publications

Page 1 of 4

NON-RADAR LATERAL SEPARATION OF IFR FLIGHTS

(Superseding NOTAM 8/66)
on November 1st 1969

The following information is intended to acquaint pilots with basic non-radar lateral separation standards applied by air traffic control, and thereby facilitate flight planning and improved understanding of ATC techniques.

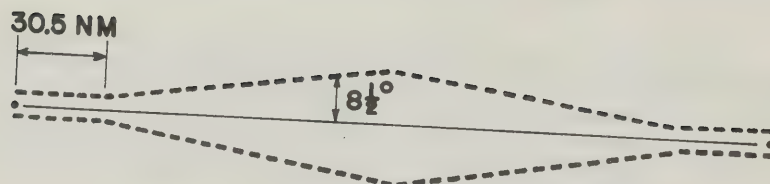
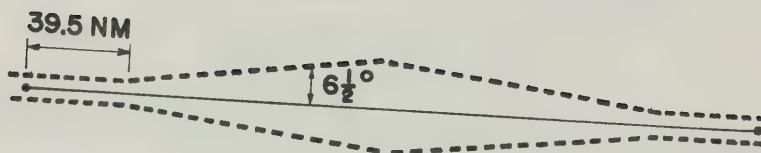
Lateral separation of IFR flights operating within controlled airspace is determined on the basis of protection by ATC of specified amounts of airspace on each side of an approved track. The dimensions of protected airspace for a particular track take into account the accuracy of available ground based navigation aids which provide track guidance, accuracy of airborne receiver and indicator equipment, a pilotage tolerance each side of indicated track, and a small allowance for sudden wind shifts and aircraft size. Separation is considered to exist provided the airspaces protected for each aircraft do not overlap.

Because of the quality of navigation signal coverage and communications facilities available, pilots are encouraged to plan their flights along designated airways whenever practicable.

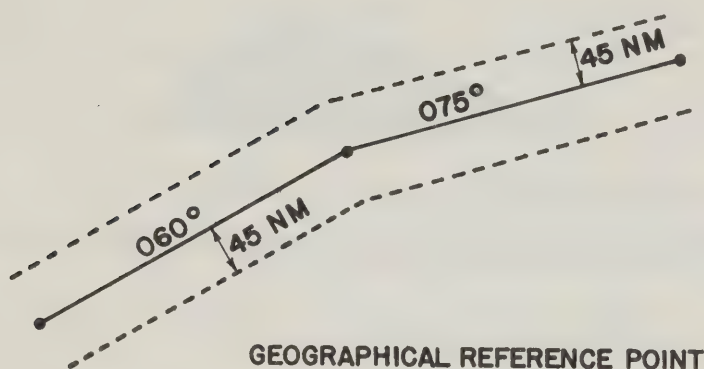
Controlled Airspace Above FL 230

A high-level airway is described in the Designated Airspace Handbook in terms of "A prescribed track between specified radio aids to navigation" and therefore has no defined lateral dimensions. ATC will, however, protect the following airspace along all approved tracks above FL 230:

- (a) High-Level Airways - Airspace is protected to a width of 4.5 NM each side of the designated track, outward from the navigation aid to point of interception with lines originating at the navigation aid and diverging $6\frac{1}{2}^{\circ}$ (used for VOR and TACAN radials) or $8\frac{1}{2}^{\circ}$ (used for tracks determined from NDB's and LF/MF range courses) each side of track. Beyond this point, increased airspace is protected within lines which diverge at $6\frac{1}{2}^{\circ}$ ($8\frac{1}{2}^{\circ}$) until intercepting similar lines extending from the adjacent navigation aid. (See note to para. 5-a).



- (b) Off-Airway Tracks Within Signal Coverage Range of Ground Based Navigation Aids - Airspace is protected to the same width as for high-level airways, provided aircraft are operating between navigation aids which normally afford continuous track guidance.
- (c) Off-Airway Tracks Beyond Signal Coverage Range of Ground Based Aids - Airspace is protected to a width of 45 NM each side of that portion of the track which is beyond normal signal coverage range of navigation aids used for track guidance.



Controlled Airspace At and Below FL 230

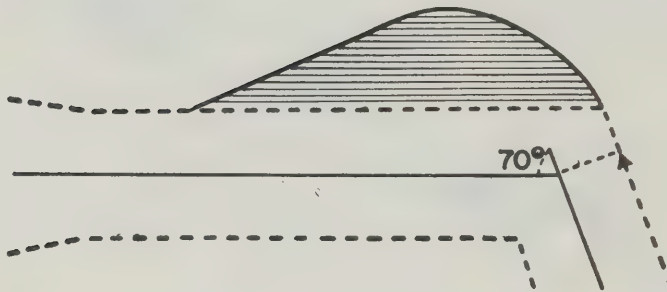
Low-altitude airways are described in the Designated Airspace Handbook in terms of lateral as well as vertical and longitudinal dimensions. ATC will protect the following airspace along approved tracks at and below FL 230:

- (a) Low-Altitude Airways - Airspace is protected to the full width of the airway.

NOTE: When an aircraft is operating with right side separation on an LF/MF range course, an additional 4.5 NM of airspace will be protected between the right boundary of the airway on which it is operating and the boundary of airspace protected for any aircraft which may be operating in adjacent controlled airspace.
- (b) Off-Airway Tracks Within Normal Signal Coverage Range of Ground Based Navigation Aids - Airspace is protected to a width of 4.5 NM each side of track to a point 39.5 NM beyond a navigation aid. Beyond this point, airspace is protected within lines extending from the navigation aid and diverging at $6\frac{1}{2}^\circ$ each side of track until interception of similar lines from an adjacent navigation aid.
- (c) Off-Airway Tracks Beyond Signal Coverage Range of Ground Based Navigation Aids - Airspace is protected to a width of 45 NM each side of that portion of track which is beyond normal signal coverage range of navigation aids used for track guidance.


Change of Direction At and Above FL 180

Additional airspace will be protected at and above FL 180 on the manoeuvring side of tracks which change direction by more than 15° overhead navigation aids or intersections. It is expected that pilots of aircraft operating below FL 180 will make turns so as to remain within the normal width of airways or airspace protected for off-airway tracks.



Since the lateral separation standards applied by air traffic control are dependent upon the probable accuracy of navigation along each track, it will be the pilot's responsibility to remain within the boundaries of protected airspace for an assigned track in order to be assured of lateral separation from other air traffic.

Normally, the airspace to be protected for an approved track will be predicated on the premise that the changeover from one navigation reference to another will take place approximately midway between facilities. Where this is not possible due to a difference in the signal coverage provided by two adjacent navigation aids, the equal signal point on an airway segment will be shown.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Aerodromes

0/18/69
17th September

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Government
File

Page 1 of 3

LIBRARY

OCT 29 1969

UNIVERSITY OF TORONTO

AERODROMES

(Amending Information Circular 0/4/68)

SECTION II

CONDITIONS FOR THE USE OF CERTAIN CIVIL AND MILITARY AERODROMES

USE OF AERODROMES BY AIRCRAFT ENGAGED IN INTERNATIONAL AIR CARRIER OPERATIONS -
this item is amended to read as follows:

The following aerodromes are designated for use by aircraft flying on international (other than trans-border) air carrier operations.

The privileges mentioned in this Circular are extended subject to each flight having been properly authorized and to whatever restrictions the Government of Canada may from time to time, or in specific cases, deem to be warranted.

Canadian aerodromes which may be used, and the basis on which they may be used, are as follows:

REGULAR

Calgary International
Edmonton International
Gander International
Halifax International

Montreal International
Toronto International
Vancouver International
Winnipeg International

REFUELLING ONLY

Frobisher

ALTERNATE

Abbotsford
** Comox
* Goose
London
North Bay

Ottawa International
Quebec
Sydney
Whitehorse
Windsor

*Notwithstanding the recent change from military to civil administration at Goose Airport, the airport is operated on a joint civil/military basis, and it may only be used as an alternate by aircraft engaged in international air carrier operations when the regular airport at Gander is unusable. Permission to use Goose under these circumstances is granted as a concession only and its unauthorized use may result in the privilege being cancelled.

TO HAVE MAILING ADDRESS CHANGED **PRINT** NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

** While the runway at the Comox military aerodrome is suitable for large aircraft engaged in international air carrier operations, it must be noted that facilities for refuelling and handling large civil aircraft, and for the provision of immigration, health and passenger amenity services, are extremely limited. Operators using Comox aerodrome as an international alternate and requiring services as above can anticipate extensive delays and passenger discomfort.

Permission to use the above aerodromes in international air carrier operations does not convey traffic rights at these aerodromes to any carrier unless such rights have been authorized by the Air Transport Committee of the Canadian Transport Commission.

USE OF DISTANT EARLY WARNING (DEW) LINE AERODROMES - this item is superseded by the following:

No DEWLine aerodrome shall be used by civil aircraft without obtaining prior permission from the responsible agency indicated below:

- (a) for the DEWLine aerodromes operated by the U.S.A.F., the responsible agency is:

Chief of Defence Staff,
Canadian Forces Headquarters,
Department of National Defence,
Ottawa 4, Ontario.

Attention: Director of Operational Requirements, Air. (DORA)

Telephone - Ottawa 992-7289.

- (b) for the DEWLine aerodromes operated by the Department of Transport, the responsible agency is:

Regional Director, Air Services,
Department of Transport,
Federal Building,
9820 - 107th Street,
Edmonton, Alberta.

Attention: Regional Controller, Civil Aviation.

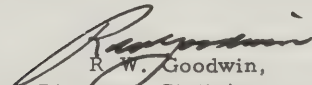
Telephone - Edmonton 424-0251

The support capability at DEWLine aerodromes, for itinerant traffic, is extremely limited. The aerodromes and base facilities are scaled and maintained for support of DEW operations; but on occasion, by prior arrangements, limited support may be provided to Canadian air carriers. All requests for permission to use a DEWLine aerodrome should precede the activity by a minimum of 15 days and must include the following information.

- (a) Aircraft type, registration, runway surface and length required.
- (b) Name and address of owner or operator together with credit arrangements for payment of required support services.
- (c) Purpose of flight, including details of government sponsorship, if applicable.
- (d) Date and estimated time of arrival. If aerodrome is to be used as a base of operation, period of operational use is to be stated.
- (e) Date and estimated time of departure from DEWLine aerodrome.
- (f) Fuel, oil, messing, accommodation, ground and cargo handling requirements.
- (g) Parking and cargo storage space required.
- (h) Number of personnel on board and estimated length of stay of each person.

For ready reference the DEWLine aerodromes together with respective operating agencies are listed below:

<u>Aerodrome</u>	<u>Operated by</u>	<u>Aerodrome</u>	<u>Operated by</u>
Broughton	USAF	Jenny Lind	USAF
Byron Bay	USAF	Komakuk Beach	USAF
Cambridge Bay	DOT	Lady Franklin	USAF
Cape Dyer	USAF	Longstaff Bluff	USAF
Cape Hooper	USAF	Mackar Inlet	USAF
Cape Perry	USAF	Nicholson	USAF
Cape Young	USAF	Pelly Bay	USAF
Clinton Point	USAF	Rowley	USAF
Dewar Lakes	USAF	Shepherd Bay	USAF
Gladman Point	USAF	Shingle Point	USAF
Hall Beach	USAF	Tuktoyaktuk	USAF


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



General

0/15/69
11th August

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Government
Communications

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RULES OF THUMB TO ASSIST IN AVOIDING OR MINIMIZING ENCOUNTERS WITH CLEAR AIR TURBULENCE

The following rules of thumb have been developed to assist pilots in avoiding or minimizing encounters with clear air turbulence. These rules are applicable for westerly jet streams.

1. Jet streams stronger than 110 knots (at the core) are apt to have areas of significant turbulence near them in the sloping tropopause above the core, in the jet stream front below the core, and on the low-pressure side of the core. In these areas there are frequently strong wind shears.
2. Wind shear and its accompanying clear air turbulence in jet streams is more intense above and to the lee of mountain ranges. For this reason, clear air turbulence should be anticipated whenever the flight path traverses a strong jet stream in the vicinity of mountainous terrain.
3. On charts for standard isobaric surfaces, such as 300 millibars, if 20-knot isotachs are spaced closer together than 60 nautical miles, there is sufficient horizontal shear for CAT. This area is normally on the poleward (low-pressure) side of the jet stream axis, but in unusual cases may occur on the equatorial side.
4. Turbulence is also related to vertical shear. From the winds-aloft charts or reports, compute the vertical shear in knots-per-thousand feet. If it is greater than five knots-per-thousand feet, turbulence is likely. Since vertical shear is related to horizontal temperature gradient, the spacing of isotherms on an upper air chart is significant. If the 5°C isotherms are closer together than two degrees of latitude (120 nautical miles), there is usually sufficient vertical shear for turbulence.
5. Curving jet streams are more apt to have turbulent edges than straight ones, especially jet streams which curve around a deep pressure trough.
6. Wind-shift areas associated with pressure troughs are frequently turbulent. The sharpness of the wind-shift is the important factor. Also, pressure ridge lines sometimes have rough air.
7. In an area where significant clear air turbulence has been reported or is forecast, it is suggested that the pilot adjust the speed to fly at the recommended rough air speed on encountering the first ripple, since the intensity of such turbulence may build up rapidly. In areas where moderate or severe CAT is expected, it is desirable to adjust the air speed prior to the turbulence encounter.
8. If jet stream turbulence is encountered with direct tailwinds or headwinds, a change of flight level or course should be initiated since these turbulent areas are elongated with the wind, and are shallow and narrow. A turn to the right in the Northern Hemisphere, or to the left in the Southern Hemisphere, places the aircraft in more favourable winds. If a turn is not feasible due to airway restrictions, a climb or descent to the next flight level will usually find smoother air.

9. If jet stream turbulence is encountered in a crosswind, it is not so important to change course or flight level since the rough areas are narrow across the wind. However, if it is desired to traverse the clear air turbulence area more quickly, either climb or descend after watching the temperature gauge for a minute or two. If temperature is rising - climb; if temperature is falling - descend. Application of these rules will prevent following the sloping tropopause or frontal surface and staying in the turbulent area. If the temperature remains constant, the flight is probably close to the level of the core, in which case either climb or descend as convenient.
10. If turbulence is encountered in an abrupt wind-shift associated with a sharp pressure trough line, establish a course across the trough rather than parallel to it. A change in flight level is not so likely to alleviate the bumpiness as in jet stream turbulence.
11. If turbulence is expected because of penetration of a sloping tropopause, watch the temperature gauge. The point of coldest temperature along the flight path will be the tropopause penetration. Turbulence will be most pronounced in the temperature-change zone on the stratospheric side of the sloping tropopause.
12. Both vertical and horizontal wind shear are, of course, greatly intensified in mountain wave conditions. Therefore, when the flight path traverses a mountain wave type of flow, it is desirable to fly at turbulence-penetration speed and avoid flight over areas where the terrain drops abruptly, even though there may be no lenticular clouds to identify the condition.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



AERODROMES

0/19/69
2nd October

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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SPECIAL PROCEDURES TO AVOID INJURY TO PERSONS SWIMMING AND BOATING.

The Aeronautical Information Publication, Canada Air Pilot Water Aerodrome Supplement contains essential information for pilots and operators using water aerodrome facilities and services in Canada. Hazards and obstructions, as well as Special Procedures with which pilots and operators must comply in order to avoid injury to persons swimming or boating in the vicinity of water aerodromes, are included. The publication is available from:- Map Distribution Office, Surveys and Mapping Branch, Department of Energy, Mines and Resources, 615 Booth Street, Ottawa 4, Ontario. The cost price is \$1.00, prepaid with a Money Order or cheque made payable to the Receiver General of Canada.


Revisions to the Water Aerodrome Supplement as required, are issued in the form of Class II Notices to Airmen (NOTAM) and must be consulted to obtain current information.

To reduce the risk of collision with swimmers and with boats, the attention of all aircraft operators using any of the following listed water aerodromes is directed particularly to the relevant information published in the Canada Air Pilot Water Aerodrome Supplement.

Bainsville, Ontario
Fort McMurray, Alberta
Fredericton, N. B.
Hull, Quebec
Kenora, Ontario
Minaki, Ontario
Nanaimo, B. C.
Norway House, Manitoba
Petawawa, Ontario
Prince Rupert, B. C.

Red Lake, Ontario
Ste. Agathe-Des-Monts, Quebec
Shubenacadie, N. S.
Toronto Island, Ontario
Vancouver Harbour, B. C.
Vancouver Int'l., B. C.
Victoria Harbour, B. C.
Waskesiu Lake, Saskatchewan
Waverley, N. S.

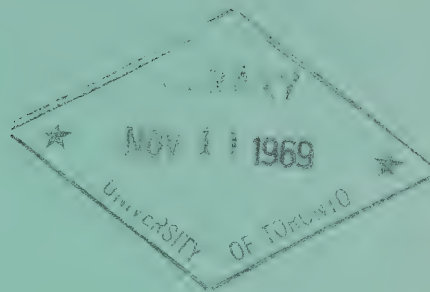
In addition to the above it should be noted that at Kenora, Ontario, Rabbit Lake is not to be used by aircraft as a water aerodrome.


B. W. Goodwin,
Director, Civil Aviation.



Government
Publications

0-20-69



INFORMATION CIRCULAR

**CUSTOMS
AND
IMMIGRATION**

DEPARTMENT OF TRANSPORT

CIVIL AVIATION BRANCH

INFORMATION CIRCULAR



Customs and Immigration

0/20/69
15th October

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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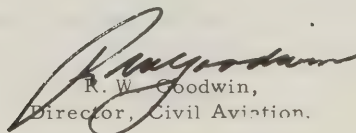
CUSTOMS CLEARANCE PROCEDURES

and

AUTHORIZED CANADIAN AERODROMES OF ENTRY AND EXIT
(Superseding Information Circular 0/5/68)

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Issued Under the Authority of


R. W. Goodwin,
Director, Civil Aviation.

SECTION I

CUSTOMS NOTIFICATION REQUIREMENTS

Aircraft entering Canada are required to land initially at one of the authorized Canadian customs airports of entry and exit listed in Section 7. Advance notice as to time and place of first arrival must be forwarded to the appropriate officer of customs by mail, telephone or telegraph. If considered advisable the aircraft operator may request the Canadian Customs officer to furnish a reply, which can then be carried into Canada by the pilot. The importance of this will be realized when one considers the possibility of over-flying the intended airport, landing at another place by mistake, or making a forced landing, in all of which cases the reply from the Canadian Customs officer will assist the pilot in making his report to Customs or the Royal Canadian Mounted Police as the case may be. Without such a telegram the aircraft's presence at a place where no advance notice of arrival has been received might cause misunderstanding.

A reciprocal arrangement for notifying Customs and Immigration officials via flight-plans is also available for flights between the United States and Canadian Airports listed in Section 6. If first arrival will be at a port of entry not listed in Section 6, it is the pilot's responsibility to notify the appropriate officer of Customs in advance, by mail, telephone or telegraph as indicated above.

SECTION 2

SPECIAL SERVICE AND TRANSPORTATION CHARGES

Pleasure, Military and Government Aircraft

Customs service is provided free of charge for "pleasure", military or government aircraft operating internationally, but transportation charges are assessed when it is necessary for a Customs officer to make a special trip to the airport. The term "pleasure" in this instance includes company-owned aircraft when used solely for health or pleasure. When an aircraft is rented or chartered from an airline, flying club or other type of rental agency, the purpose of the flight rather than the ownership of the aircraft is the determining factor with respect to the assessment of special service charges.

Unscheduled Commercial and Company Aircraft

With the exception of Sundays, where officers are on duty at an airport, service is rendered to unscheduled commercial, chartered and company aircraft without assessment of special service charges. On Sundays special service charges are assessable only when documentation or physical checking of commercial goods intended for clearance or export is necessary.

Where officers are not on duty, service is rendered without charge during the hours of 8 a. m. to 5 p. m., Monday through Saturday. Beyond these hours and on Sundays special service charges are assessable only when documentation or physical checking of commercial goods intended for clearance or export is necessary.

Special service charges are assessed at the rate of \$5.00 per hour or a portion thereof with a minimum payment of \$10.00.

SECTION 3

FORMALITIES ON LANDING

- (a) First landing of aircraft shall be made at the Customs Airport or Aerodrome where advance notice of arrival has been given.
- (b) On arrival, the owner or pilot of the aircraft shall report to the proper officer of Customs and complete the prescribed form. This report will constitute an inward and outward report except as provided for in subsection (d). In the event of a forced landing or diversion to another airport, the pilot is to report the circumstances as soon as possible to the nearest Collector of Customs or to the Royal Canadian Mounted Police.

- (c) Provided the Customs officer is satisfied that the aircraft will be used by a non-resident for purposes of health or pleasure only, and not for trade or profit, he will issue a cruising permit on the prescribed form to the owner or pilot for a period not exceeding three months. A company-owned aircraft or aircraft rented from an airline, flying club or rental agency may also be issued a permit provided such aircraft will be used solely for purposes of health or pleasure.
- (d) Once the pilot is in possession of a valid permit, further reporting at Customs will not be necessary, either prior to or at time of departure, unless articles were documented on a temporary permit at time of arrival in Canada or unless other goods which require documentary control are being carried on the outward flight. In this event report outward must be filed with Customs at actual time of departure from Canada.

SECTION 4

FORMALITIES ON DEPARTURE

Provided the owner or pilot has a valid cruising permit, further reporting to Customs at time of departure is not necessary, unless goods which require documentary control are being carried on the outward flight.

SECTION 5

LICENSING REQUIREMENTS FOR VISITING PILOTS

The pilot of a visiting aircraft may be required, at the time of his first landing in Canada, to produce his pilot's licence and Aircraft Log Book, for examination by Customs, Immigration, Civil Aviation officials or by the Royal Canadian Mounted Police.

A person flying a United States aircraft into Canada must be in possession of a U. S. A. unrestricted certificate of airworthiness for such aircraft and a valid U. S. A. pilot licence, excepting when special permission has been granted in respect of aircraft operating with other than an unrestricted certificate of airworthiness.

A tourist who is a holder of a U. S. A. Pilot Certificate may fly Canadian registered aircraft by obtaining a Temporary Private Pilot Permit (Tourist) on application to the Regional Superintendent, Air Regulations and after having passed a written examination on the Air Regulations and air traffic rules and procedures.

SECTION 6

CANADIAN AND UNITED STATES "ADCUS" AIRPORTS

As a result of an agreement between the Federal Aviation Administration of the United States, the Department of Transport, and the Department of National Revenue, a "Communications-Operation Plan" for Customs notification is in effect. The plan provides that a pilot, when filing a flight plan for a flight to certain Customs authorized airports, may request that the Customs and Immigration services be notified of the expected time of arrival of the aircraft at a particular aerodrome. Notification of the expected time of arrival of the aircraft will be through the appropriate airport tower or aeradio station as an alternative to notification by telephone or telegraph direct from the pilot. This may be done by adding the abbreviation "ADCUS" in the "OTHER INFORMATION" portion of the flight plan to indicate that Customs and Immigration agencies are to be notified. If the flight is from Canada to the United States, the number of U. S. and non U. S. citizens must be included on the flight plan. If the flight is from United States to Canada, information as to the citizenship of the pilot or passengers is not required by Canadian authorities.

SECTION 6 (Cont'd)

CANADIAN AIRPORTS TO WHICH "ADCUS" MESSAGES MAY BE TRANSMITTED BY FLIGHT PLAN:

AIRPORT OF ENTRYCOMMUNICATION STATION

Abbotsford, B. C. (1)
 Brandon, Man.
 Calgary International, Alta.
 Charlottetown, P. E. I.
 Chilliwack, B. C. (1)
 Cranbrook, B. C. (1)
 Edmonton International Airport, Alta.
 Edmonton Industrial, Alta. (1)
 Fort William, Ont.
 Fredericton, N. B.
 Frobisher, N. W. T.
 Gore Bay, Ont. (1)
 Halifax International Airport, N. S.
 Kamloops, B. C. (1)
 Kelowna, B. C. (1)
 Kenora, Ont. (1)
 Lakehead, Ont.
 Lethbridge, Alta. (1)
 London, Ont.
 Medicine Hat, Alta. (1)
 Moncton, N. B.
 Mont Joli, Que.
 Montreal International Airport, Que.
 Muskoka, Ont. (1)
 Nanaimo, B. C.
 North Bay, Ont.
 Ottawa International Airport, Ont.
 Penticton, B. C. (1)
 Port Hardy, B. C. (1) (2)
 Prince Albert, Sask.
 Prince George, B. C. (1)
 Quebec, Que.
 Regina, Sask.
 Saint John, N. B.
 Sandspit, B. C. (1) (2)
 Saskatoon, Sask. (1)
 Sault Ste. Marie, Ont.
 Sept-Iles, Que.
 Sherbrooke, Que. (1)
 Sudbury, Ont. (1)
 Swift Current, Sask. (1)
 Toronto International Airport, Ont.
 Toronto Island, Ont. (1)
 Vancouver International Airport, B. C.
 Victoria International Airport, B. C.
 Whitehorse, Y. T.
 Wiarton, Ont. (1)
 Windsor, Ont.
 Winnipeg International Airport, Man.
 Yarmouth, N. S.
 Yorkton, Sask. (1)

Abbotsford Tower
 Brandon Aeradio
 Calgary Tower
 Charlottetown Aeradio
 Abbotsford Aeradio
 Kimberley Aeradio
 Edmonton International Tower
 Edmonton Tower
 Lakehead Tower
 Fredericton Tower
 Frobisher Aeradio
 Gore Bay Aeradio
 Halifax Tower
 Kamloops Aeradio
 Penticton Aeradio
 Kenora Aeradio
 Lakehead Aeradio
 Lethbridge Tower
 London Tower
 Medicine Hat Aeradio
 Moncton Tower
 Mont Joli Aeradio
 Montreal Tower
 Muskoka Aeradio
 Nanaimo Aeradio
 North Bay Tower
 Ottawa Tower
 Penticton Aeradio
 Port Hardy Tower
 Prince Albert Aeradio
 Prince George Aeradio
 Quebec Tower
 Regina Tower
 Saint John Tower
 Sandspit Aeradio
 Saskatoon Tower
 Sault Ste. Marie, Ont. Aeradio
 Sept-Iles Tower
 Sherbrooke Aeradio
 Sudbury Aeradio
 Swift Current Aeradio
 Toronto Tower
 Toronto Island Tower
 Vancouver Tower
 Victoria Tower
 Whitehorse Tower
 Wiarton Aeradio
 Windsor Tower
 Winnipeg Tower
 Yarmouth Aeradio
 Yorkton Aeradio

NOTES: (1) Restricted to non-commercial traffic.
 (2) Clearance of intransit aircraft only.

SECTION 6 (Cont'd)

2. UNITED STATES AIRPORTS TO WHICH "ADCUS" MESSAGES MAY BE TRANSMITTED BY
FLIGHT PLAN:

At least one hour advance notice of arrival must be furnished to U. S. Customs, unless otherwise noted.

ALABAMA

Birmingham/Birmingham Mun.
Mobile/Bates Field
Montgomery/Dannelly Arpt.

ALASKA

Anchorage/Anchorage Int'l
Cold Bay/Cold Bay Arpt
Fairbanks/Fairbanks Int'l
Juneau/Juneau SPB
Juneau/Juneau Mun
Ketchikan/Alaska Coastal Airlines SPB

ARIZONA

Douglas/Bisbee-Douglas Int'l
Nogales/Nogales Int'l
Tucson/Tucson Int'l
Yuma/Yuma MCAS Int'l

CALIFORNIA

Calexico/Calexico Int'l
Los Angeles/Los Angeles Int'l
Oakland/Oakland Int'l
San Diego/San Diego Int'l Lindbergh Fld
San Francisco/San Francisco Int'l

CONNECTICUT

Bridgeport/Bridgeport Mun
East Hartford/Rentschler Fld
Hartford/Brainard Field
Windsor Locks/Bradley Int'l

DELAWARE

Wilmington/Greater Wilmington
(2 hours advance notice required)

DISTRICT OF COLUMBIA

Washington/Dulles Int'l

FLORIDA

Fort Lauderdale/Ft. Lauderdale - Hollywood Int'l
Jacksonville/Imeson
Key West/Key West Int'l
Miami/Miami Int'l
Tampa/Tampa Int'l
West Palm Beach/Palm Beach Int'l

GEORGIA

Atlanta/Atlanta Arpt (At least 2 hours advance
notice required.)
Brunswick/McKinnon
Savannah/Savannah - Travis Mun.

HAWAII

Honolulu/Honolulu Int'l

ILLINOIS

Chicago/O'Hare Int'l
Chicago/Merril C. Meigs Fld
Chicago/Midway

INDIANA

Indianapolis/Indianapolis Mun (Weir Cook)
(1½ hours advance notice required)

KENTUCKY

Louisville/Bowman Fld (2 hours advance
notice required)
Louisville/Standiford Fld (2 hours advance
notice required)

LOUISIANA

Baton Rouge/Ryan Arpt
Lake Charles/Lake Charles Mun (2 hours
advance notice required)
New Orleans/New Orleans Int'l (Moisant Fld)
(2 hours advance notice required)

MAINE

Bar Harbor/Bar Harbor Arpt
Caribou/Caribou Mun
Fort Fairfield/Fort Fairfield Mun
Houlton/Houlton Int'l
Old Town/Old Town Mun
Portland/Portland Mun
Presque Isle/Presque Isle Mun

MARYLAND

Baltimore/Friendship Int'l

MASSACHUSETTS

Bedford/Lawrence G. Hanscom Fld
Beverly/Beverly Mun
Boston/Logan Int'l
Lawrence/Lawrence Mun
New Bedford/New Bedford Mun
Worcester/Worcester Mun

SECTION 6 (Cont'd)

MICHIGAN

Detroit/Detroit-City
Detroit/Metropolitan Wayne County
Hancock/Houghton County Memorial Arpt
(Charge for mileage.)
Menominee/Menominee County Arpt
Port Huron/Baker's Field
Port Huron/St. Clair County Arpt
Sault Ste. Marie/Sault Ste. Marie Mun

MINNESOTA

Duluth/Duluth Int'l
Duluth/Sky Harbor Arpt
Grand Marais/Sky Port Lodge SPB (Customs
office closed October 16 - May 14.)
International Falls/Falls Int'l
Minneapolis/Minneapolis - St Paul Int'l
(Wold Chamberlain)
Rainier/International SPB

MISSOURI

Kansas City/Mid Continent Int'l (No agriculture
inspector available.)
Kansas City/Kansas City Mun (No agriculture
inspector available.)
St. Louis/Lambert Fld (3 hours advance notice
required.)

MONTANA

Cut Bank/Cut Bank Arpt
Glasgow/Glasgow Int'l
Great Falls/Great Falls Int'l
Havre/Havre-City County Arpt

NEW JERSEY

Newark/Newark Arpt

NEW MEXICO

Columbus/Columbus Mun

NEW YORK

Albany/Albany County
Buffalo/Greater Buffalo Int'l
New York/John F. Kennedy Int'l
New York/La Guardia Arpt
Niagara Falls/Niagara Falls Int'l
Rochester/Glen Haven Skyport SPB
Rochester/Monroe County
Syracuse/Hancock Arpt

NORTH CAROLINA

Charlotte/Douglas Mun (More than one
hour advance notice required.)
Greensboro/Greensboro-High Point-
Winston Salem-Regional (More than
one hour advance notice required.)
Wilmington/New Hanover County (More
than one hour advance notice required.)
Winston Salem/Smith Reynolds (More
than one hour advance notice required.)

NORTH DAKOTA

Grand Forks/Grand Forks Int'l
Minot/Minot Int'l
Williston/Sioux Falls

OHIO

Akron/Mun
Cincinnati/Great Cincinnati Arpt (2 hours
advance notice required.)
Cincinnati/Cincinnati Mun-Lunken Fld (2
hours advance notice required.)
Cleveland/Burke Lakefront SPB
Cleveland/Cleveland Hopkins Arpt
Columbus/Port Columbus Int'l
Dayton/James M. Cox - Dayton Mun
Put-in-Bay/Put-in-Bay Arpt
Sandusky/Griffing - Sandusky Arpt
Toledo/Toledo Express Arpt
Toledo/National Arpt

OREGON

Portland/Portland Int'l

PENNSYLVANIA

Philadelphia/Philadelphia Int'l
Pittsburg/Allegheny County Arpt (2 hours
advance notice required.)
Pittsburg/Greater Pittsburg Arpt (2 hours
advance notice required.)

PUERTO RICO

San Juan/Isla Grande Arpt (Arrivals from
Virgin Islands and foreign locations must
notify Customs prior to departure.)
San Juan/Puerto Rico Int'l (2 hours advance
notice required. Flights from nearby
countries must notify Customs prior to
departure.)

SECTION 6 (Cont'd)

RHODE ISLAND

Providence/Theodore Francis Green State Arpt

SOUTH CAROLINA

Charleston/Charleston AFB/Mun

TEXAS

Beaumont - Port Arthur/Jefferson County Arpt
Corpus Christi/Corpus Christi Int'l Arpt (2 hours
advance notice required.)

Dallas/Love Fld

El Paso/El Paso Int'l

Houston/William P. Hobby

Laredo/Laredo Int'l

Marathon/Marathon Arpt

McAllen/Miller Int'l

San Antonio/San Antonio Int'l

VERMONT

Burlington/Burlington Mun

VIRGIN ISLANDS

St. Croix/Alexander Hamilton Arpt

St. Thomas/Harry S. Truman Arpt

VIRGINIA

Newport News/Patrick Henry Arpt

Norfolk/Norfolk Mun

Richmond/Richard E. Byrd Flying Fld

WASHINGTON

Bellingham/Bellingham Mun

Bellingham/Float Haven SPB

Blaine/Blaine Arpt

Everett/Snohomish County Arpt

Friday Harbor/Friday Harbor Arpt

Friday Harbor/Friday Harbor SPB

Oroville/Dorothy Scott

Oroville/Dorothy Scott SPB

Port Townsend/Jefferson County Int'l

Port Townsend/Port Townsend Bay

Seattle/Boeing Fld

Seattle/Kenmore Air Harbor, Lake Union Float

Seattle/Kurtzer's Marine and Airplane Service

Seattle/Lake Union/Air Service (Seaplanes)

Seattle/Seattle/Tacoma Int'l

Spokane/Felts Fld

Spokane/Spokane Int'l

WISCONSIN

Milwaukee/General Mitchell Fld

Racine/Horlick - Racine Arpt

Superior/Richard I. Bong Arpt

SECTION 7

AUTHORIZED CANADIAN CUSTOMS AIRPORTS AND AERODROMES OF
ENTRY AND EXIT

NOTE: The symbol (*) indicates service restricted to non-commercial traffic. The absence of any symbol indicates use for all purposes.

(PPR Base Commander) indicates Prior Permission Required from Base Commander of Military Aerodrome.

All times are local.

(See Pages 13 and 14 for Water Aerodromes of Entry)

LAND AERODROMES

Name of Aerodrome or
Landing Area

Customs Office

BRITISH COLUMBIA

* Abbotsford Airport (as required)	Huntingdon
* Alberni Airport (9 am - 5 pm, Mon. - Fri.)	Port Alberni
* Avey State Emergency U.S.A. - See Cascade-Laurier	
* Campbell River Airport (9 am - 5 pm, Mon. - Fri.)	Courtenay
* Cascade-Laurier (Avey State Emergency U.S.A.) (8 am - 12 mn, daily)	Cascade City
Other Aerodromes of Entry in vicinity - Grand Forks Airport	
* Castlegar Airport (as required)	Trail
* Columbia Gardens Airport - see Trail Airport	
* Chilliwack Airport (9 am - 5 pm, Mon. - Fri.)	Chilliwack
* Cranbrook Airport (as required)	Cranbrook
* Eckharts, - Porthill, Idaho, U.S.A. (8 am - 12 mn daily)	Kingsgate
Huntingdon - See Abbotsford Airport	
* Kamloops Airport (9 am - 5 pm, Mon. - Fri.)	Kamloops
* Kelowna Airport (9 am - 5 pm, Mon. - Fri.)	Kelowna
Kitimat - See Terrace Airport	
Nanaimo Airport (as required)	Nanaimo
Patricia Bay - See Victoria	
* Penticton Airport (as required)	Penticton
Port Alberni - See Alberni Airport	
* Port Hardy Airport (intransit aircraft only) (as required)	Victoria
* Powell River Airport (9 am - 5 pm, Mon. - Fri.)	Powell River
* Prince George Airport (9 am - 5 pm, Mon. - Fri.)	Prince George
Prince Rupert - See Sandspit Airport	
* Sandspit Airport (intransit aircraft only) (as required)	Prince Rupert
Terrace Airport (Intransit aircraft only) (as required)	Kitimat
* Trail Airport (Columbia Gardens) (9 am - 5 pm, daily)	Trail
Other Airports in vicinity - Castlegar	
Vancouver International Airport (24 hr. service)	Vancouver
Other Aerodromes of Entry in vicinity - Abbotsford	
* Vernon Airport (9 am - 5 pm, Mon. - Fri.)	Vernon
Victoria International Airport (24 hr. service)	Victoria

Name of Aerodrome or
Landing Area

Customs Office

ALBERTA

Calgary International Airport (6.30 am-12 mn, daily)	Calgary
Coutts - See Ross International Airport	
*Edmonton Industrial Airport (as required)	Edmonton
Edmonton International Airport (24 hr. service)	Edmonton
Other Aerodromes of Entry in Vicinity - Namao (PPR Base Commander)	
*Lethbridge Airport (9 am-6 pm, Mon.-Sat., 9 am-5 pm, Sunday)	Lethbridge
*Medicine Hat Airport (9 am-5 pm, Mon.-Fri.)	Medicine Hat
Namao Aerodrome (PPR Base Commander) (as required)	Edmonton
*Ross International Airport, Montana, U.S.A. (as required)	Coutts

SASKATCHEWAN

*Border International, North Dakota, U.S.A. (as required)	Estevan
*Scobey Border Station (as required)	Moose Jaw
*Estevan Airport (9 am-5 pm, Mon.-Fri.)	Estevan
Other Aerodromes of Entry in vicinity-Border Airstrip, Noonan, North Dakota, U.S.A.	
Moose Jaw - See West-Air Airport	
Prince Albert Airport (9 am-5 pm, Mon.-Fri.)	Prince Albert
Regina Airport (8 am-4 pm, Mon.-Thurs., 8 am-12 mn, Fri.-Sun.)	Regina
*Saskatoon Airport (May 1-Oct. 31, 9 am-5 pm daily)	
(Nov. 1-Apr. 30, 9 am-5 pm, Mon.-Fri.)	Saskatoon
*Swift Current Airport (9 am-5 pm, Mon.-Fri.)	Swift Current
*West-Air Airport (9 am-5 pm, Mon.-Fri.)	Moose Jaw
*West Poplar Airport (as required)	Moose Jaw
*Weyburn Airport (9 am-5 pm, Mon.-Fri.)	Weyburn
*Claresholm Aerodrome (as required)	Lethbridge
*Yorkton Airport (9 am-5 pm, Mon.-Fri.)	Yorkton

MANITOBA

Boissevain - See International Peace Gardens Airport	
Brandon Airport - (May 1-Oct. 31, 9 am-5 pm daily)	
(Nov. 1-Apr. 30, 9 am-5 pm, Mon.-Fri.)	Brandon
*Boundary Line Airstrip (as required)	Sprague
Emerson - See Pembina Airport	
Estevan Airport (9 am-5 pm, Mon.-Fri.)	Estevan
*Haskett Aerodrome	Winkler
*International Peace Gardens Airport, North Dakota, U.S.A. (as required)	Boissevain
*Pembina Airport, North Dakota, U.S.A. (as required)	Emerson
Pine Creek Airport, Minn., U.S.A. - See Boundary Line Airstrip	
Sprague - See Boundary Line Airstrip	
Winkler - Boarder Aerodrome (as required)	Winkler
Winnipeg International Airport (24 hr. service)	Winnipeg

ONTARIO

*Barrie Airport (9 am-5 pm, Mon.-Fri.)	Barrie
*Baudette Airport, Minn., U.S.A. (24 hr. service)	Rainey River
*Belleville Airport (9 am-5 pm, Mon.-Fri.)	Belleville
Bracebridge - See Muskoka Airport	
*Brantford Airport (9 am-5 pm, Mon.-Fri.)	Brantford
*Brockville Airport (May 15-Sept. 14, 9 am-8 pm, Mon.-Fri.)	
9 am-10 pm, Sat., Sun. & Holidays)	
(Sept. 15-Sept. 30, 9 am-5 pm daily)	
(Oct. 1-May 14, 9 am-5 pm, Mon.-Fri.)	Brockville
*Buttonville Airport (9 am-5 pm, Mon.-Fri.)	Newmarket
*Chatham Airport (9 am-5 pm, Mon.-Fri.)	Chatham

Name of Aerodrome or
Landing Area

Customs Office

ONTARIO (Cont'd)

Fort Frances - See Falls International Airport, Minn., U.S.A.	
Fort William - See Lakehead Airport	
Galt - See Waterloo - Wellington Airport	
*Ganonoque Airport (May 1-15 & Oct., 8 am-6 pm daily)	
(May 16-31 & Sept., 8 am-8 pm daily)	
(June-August, 8 am-10 pm daily)	
(Nov.-April, 9 am-5 pm, Mon.-Fri.)	Lansdowne
Goderich Airport (9 am-5 pm, Mon.-Fri.)	Goderich
*Core Bay Airport (May 15-Sept. 15, 7 am-9 pm daily)	
(Sept. 16-Nov. 15, 9 am-5 pm, Mon.-Fri.)	Little Current
*Guelph Air Park (9 am-5 pm, Mon.-Fri.)	Guelph
Hamilton Airport (8 am-12 mn daily & as required)	Hamilton
Hespeler - See Waterloo-Wellington Airport	
Falls International Airport, Minn., U.S.A. (24 hr. service)	Fort Frances
*Kenora Airport (Apr. 1-Oct. 31, 8 am-8 pm, daily)	
(Nov. 1-Mar. 31, 9 am-5 pm, Mon.-Fri.)	Kenora
Kingston Airport (May 1-Oct. 31, 7 am-11 pm, daily)	
(Nov. 1-Apr. 30, 9 am-5 pm, daily)	Kingston
Kitchener - See Waterloo-Wellington Airport	
Lakehead Airport (7 am-9 pm, daily)	Port Arthur
*Lindsay Airport (9 am-5 pm, Mon.-Fri.)	Lindsay
Little Current (May 15-Sept. 15, 9 am-5 pm, daily)	
(Sept. 16-May 14, 9 am-5 pm, Mon.-Fri.)	Little Current
London Airport (8 am-12 mn, daily)	London
*Muskoka Airport (May 16-Sept. 14, 8 am-8 pm, daily)	
(Sept. 15-May 15, 9 am-5 pm, Mon.-Fri.)	Bracebridge
*Niagara Falls Helicopters Heliport (as required)	Niagara Falls
Niagara Falls - See St. Catharines and Welland Airports	
North Bay Airport (9 am-5 pm, Mon.-Fri.)	North Bay
Newmarket - See Buttonville Airport	
*Orillia Airport (9 am-5 pm, Mon.-Fri.)	Orillia
Oshawa Airport (9 am-5 pm, Mon.-Fri.)	Oshawa
Ottawa International Airport (7 am-12 mn daily)	Ottawa
*Pelee Island Airport (as required)	Leamington
*Pembroke Airport (9 am-5 pm, Mon.-Fri.)	Pembroke
*Perth Airport (9 am-5 pm, Mon.-Fri.)	Perth
*Peterborough Airport (May 1-Sept. 30, 8 am-9 pm, daily)	
(Oct. 1-Apr. 30, 9 am-5 pm, Mon.-Fri.)	Peterborough
*Picton Airport (9 am-5 pm, Mon.-Fri.)	Picton
Port Arthur - See Lakehead Airport	
Port Colborne - See Welland Airport	
Preston - See Waterloo-Wellington	
Rainey River - See Baudette Airport, Minn., U.S.A.	
*St. Catharines Airport (as required)	St. Catharines
*St. Thomas Airport (9 am-5 pm, Mon.-Fri.)	St. Thomas
Sarnia Airport (as required)	Sarnia
Sault Ste. Marie Airport (24 hr. service)	Sault Ste. Marie
*Smiths Falls Airport (9 am-5 pm, Mon.-Fri.)	Smiths Falls
Southampton - See Port Elgin	
*Sudbury Airport (9 am-5 pm, daily)	Sudbury
Thorold - See St. Catharines Airport	
*Timmings Airport (9 am-5 pm, Mon.-Fri.)	Timmings
Toronto International Airport (24 hr. service)	Toronto
*Toronto Island Airport (7 am-12 mn, daily)	Toronto
Other Airports of Entry in vicinity - Buttonville Airport	
Trenton Aerodrome (PPR Base Commander) (24 hr. service)	Trenton
*Waterloo-Wellington Airport (9 am-5 pm, Mon.-Fri. daily & as required)	Kitchener
*Welland Airport (9 am-5 pm, Mon.-Fri.)	Welland
*Warton Airport (9 am-5 pm, Mon.-Fri. & as required)	Owen Sound
Windsor Airport (7 am-11 pm daily)	Windsor

<u>Name of Aerodrome or Landing Area</u>	<u>Customs Office</u>
QUEBEC	
Baie Comeau Airport (8 am-5 pm, Mon. -Fri.)	Bai Comeau
*Bromont Airport (as required)	Cowansville
*Charlevoix Airport (9 am-5 pm, Mon. -Fri.)	Quebec
Cowansville - See Sweetsburg Airport	
*Drummondville Airport (9 am-5 pm, Mon. -Fri.)	Drummondville
*Gaspé Airport (9 am-5 pm, Mon. -Fri.)	Gaspé
*Granby Airport (9 am-5 pm, Mon. -Fri.)	Granby
*Lachute Airport (9 am-5 pm, Mon. -Fri.)	Lachute
*Megantic Airport (9 am-5 pm, Mon. -Fri.)	Lac Megantic
Mont Joli Airport (9 am-5 pm, Mon. -Fri.)	Mont Joli
Montreal International Airport (24 hr. service)	Montreal
Quebec Airport (Apr. 1-Nov. 30, 9 am-5 pm)	
(Dec. 1-Mar. 31, as required)	Quebec
Rimouski Airport (9 am-5 pm, Mon. -Fri.)	Rimouski
*Rivière-du-Loup Airport (9 am-5 pm, Mon. -Fri.)	Rivière-du-Loup
*St. Hubert Airport (8 am-4 pm daily)	Montreal
*St. Jean Airport (9 am-5 pm, Mon. -Fri.)	St. Jean
*St. Jerome (9 am- 5 pm, Mon. -Fri.)	St. Jerome
Sept Isles Airport (9 am-5 pm, Mon. -Fri.)	Sept Isles
*Sherbrooke Airport (9 am-5 pm, Mon. -Fri.)	Sherbrooke
*Sweetsburg Airport (9 am-5 pm, Mon. -Fri.)	Cowansville
*Trois-Rivières Airport (8 am-5 pm, Mon. -Fri.)	Trois-Rivières
*Val d'Or Airport (9 am-5 pm, Mon. -Fri.)	Val d'Or
NEW BRUNSWICK	
Centreville - See Florenceville Aerodrome	
*Charlo Airport (9 am-5 pm, Mon. -Fri.)	Dalhousie
Chatham Aerodrome (PPR Base Commander) (9 am-5 pm, Mon. -Fri.)	Newcastle
Edmundston Airport (as required)	Edmundston
*Florenceville Aerodrome (9 am-5 pm, Mon. -Fri.)	Centreville
Fredericton Airport (as required)	Fredericton
*Grand Falls Airport (9 am-5 pm, Mon. -Fri.)	Grand Falls
*Houlton Airport, Maine, U. S. A. (as required)	Woodstock
Moncton Airport (as required)	Moncton
Saint John Airport (as required)	Saint John
*St. Stephen Airport (as required)	St. Stephen
Woodstock - See Houlton Airport, Maine, U. S. A.	
NOVA SCOTIA	
*Digby Airport (9 am-5 pm, Mon. -Fri.)	Digby
Greenwood Aerodrome (PPR Base Commander) (9 am-5 pm, Mon. -Fri.)	Middleton
Halifax International Airport (8 am-12 mn daily)	Halifax
Middleton - See Greenwood Aerodrome	
New Glasgow - See Trenton Airport	
Sydney Airport (as required)	Sydney
Shearwater Aerodrome (PPR Base Commander) (as required)	Halifax
Trenton Airport (9 am-5 pm, Mon. -Fri.)	New Glasgow
Yarmouth Airport (as required)	Yarmouth
PRINCE EDWARD ISLAND	
Charlottetown Airport (9 am-5 pm, Mon. -Fri.)	Charlottetown
Summerside Aerodrome (PPR Base Commander) (9 am-5 pm, Mon. -Fri.)	Summerside

Name of Aerodrome or
Landing Area

Customs Office

NEWFOUNDLAND

Gander International Airport (24 hr. service)
Goose Airport (as required)
St. John's - See Torbay Airport
Stephenville Airport (9 am-5 pm, Mon. - Fri.)
Torbay Airport (as required)

Gander
Goose Airport

Stephenville
St. John's

Notwithstanding the recent change from military to civil administration at Goose Airport, the airport is operated on a joint civil/military basis, and it may only be used as an alternate by aircraft engaged in international air carrier operations when the regular airport at Gander is unusable. Permission to use Goose under these circumstances is granted as a concession only and its unauthorized use may result in the privilege being cancelled.

YUKON TERRITORY

Dawson Airport (as required)
Fort Nelson Airport (as required)
Whitehorse Airport (as required)

Dawson
Fort Nelson
Whitehorse

NORTHWEST TERRITORIES

Frobisher Airport (as required)
Inuvik (as required)

Frobisher Airport (RCMP)
Inuvik (RCMP)

AUTHORIZED CANADIAN CUSTOMS AIRPORTS AND AERODROMES OF ENTRY AND EXIT

NOTE: The symbol (*) indicates service restricted to non-commercial traffic. The absence of any symbol indicates use for all purposes.

The symbol (S) indicates that Customs services are available during the summer season only.

WATER AERODROMES

NAME OF AERODROME
OR LANDING AREA

CUSTOMS OFFICEBRITISH COLUMBIA

* Bedwell Harbour (Victoria) (May 1-June 15, 9 am-6 pm)	
(June 16-Sept. 1, 8 am-10 pm)	
(Sept. 2-Sept. 30, 9 am-6 pm)	Victoria
* Campbell River (9 am-5 pm, Mon.-Fri.)	Courtney
* Courtney (Campbell River) (9 am-5 pm, Mon.-Fri.)	Courtney
* Kamloops Seaplane Base (Kamloops Lake & Thompson River)	
(9 am-5 pm, Mon.-Fri.)	Kamloops
Kingsgate - See Rykert's	
Nanaimo Malaspina Hotel Dock (as required)	Nanaimo
* Nelson Seaplane Landing (Kootenay Lake) (9 am-5 pm, Mon.-Fri.)	Nelson
* Penticton (Skaha Lake) (as required)	Penticton
* Port Alberni (Ocean Air Ltd. Dock Alberni Inlet) (9 am-5 pm,	
Mon.-Fri.)	Port Alberni
* Powell River (Powell Lake) (9 am-5 pm, Mon.-Fri.)	Powell River
* Prince Rupert (Seal Cover) (as required)	Prince Rupert
* Rykert's River Landing (Kootenay River) (8 am-12 mn, daily)	Kingsgate
Victoria (Harbour) (as required)	Victoria

ONTARIO

* Basswood Lake (Fort Frances) (S) (May 15-Sept. 30, 7 am-7 pm daily)	Fort Frances
* Brockville (St. Lawrence River) (May 15-Sept. 14, 9 am-8 pm, Mon.-	
Fri.)	
(9 am-10 pm, Sat., Sun. & Holidays)	
(Sept. 15-Sept. 30, 9 am-5 pm daily)	
(Oct. 1-May 14, 9 am-5 pm, Mon.-	
Fri.)	Brockville
* Cyclone Island (Lake of the Woods) (S) (May 15-Oct. 31, 7 am-9 pm	
daily)	Rainy River
Fort Frances - See Basswood Lake, Prairie Portage, Sand Bay,	
Rainy Lake	Sand Point Lake
* Gananoque (St. Lawrence River) (May 1-15th & Oct. 8 am-6 pm daily)	
(May 16-31 & Sept., 8 am-8 pm daily)	
(June-August, 8 am-10 pm daily)	
(Nov.-Apr., 9 am-5 pm, Mon.-Fri.)	Lansdowne
* Goderich (Lake Huron) (9 am-5 pm, Mon.-Fri.)	Goderich
* Gore Bay (Gore Bay) (Sept. 16-Nov. 15, 9 am-5 pm, Mon.-Fri.)	Little Current
Hamilton (Lake Ontario) (as required)	Hamilton
* Kenora (Lake of the Woods) (Apr. 1-Oct. 31, 8 am-8 pm daily)	
(Nov. 1-Mar. 31, 9 am-5 pm, Mon.-Fri.)	Kenora
* Kingston (Lake Ontario) (May 1-Oct. 31, 7 am-11 pm daily)	
(Nov. 1-Apr. 30, 9 am-5 pm daily)	Kingston
* Little Current (Lake Huron) (May 15-Sept. 15, 9 am-5 pm daily)	
(Sept. 16-May 14, 9 am-5 pm, Mon.-Fri.)	Little Current
* Muskoka Wharf, Gravenhurst (S) (May 16-Sept. 14, 8 am-8 pm)	
(Sept. 15-May 15, 9 am-5 pm, Mon.-	
Fri.)	Bracebridge

WATER AERODROMES

NAME OF AERODROME
OR LANDING AREA

CUSTOMS OFFICE

ONTARIO (Cont'd)

* North Bay (Trout Lake) (9 am-5 pm, Mon. -Fri.)	North Bay
* Orillia (Lake Couchiching) (9 am-5 pm, Mon. -Fri.)	Orillia
* Ottawa (Ottawa River at Rockcliffe) (7 am-12 mn)	Ottawa
* Owen Sound (Lake Huron) (9 am-5 pm, Mon. -Fri. & as required)	Owen Sound
* Parry Sound (Lake Huron) (9 am-5 pm, Mon. -Fri.)	Parry Sound
Partridge Point - See Sault Ste. Marie	
* Picton (Lake Ontario) (9 am-5 pm, Mon. -Fri.)	Picton
* Port Arthur (Thunder Bay or Lake Superior) (7 am-9 pm daily)	Port Arthur
* Port Dalhousie (as required)	St. Catharines
* Prairie Portage (Basswood Lake) (May 15-Sept. 30, 7 am-7 pm daily)	Fort Frances
* Rainy River (Rainy River) (24 hr. service)	Rainy River
See also: Cyclone Island & Sturgeon Channel	
* Rockcliffe - See Ottawa	
* Saganaga Lake (S) (May 14-Oct. 14, 7 am-7 pm daily)	Port Arthur
* Sand Bay (Rainy Lake) (24 hr. service)	Fort Frances
* Sand Point Lake (S) (May 15-Oct. 15, 7 am-9 pm)	Fort Frances
* Sarnia (St. Clair River) (as required)	Sarnia
* Sault Ste. Marie (at Partridge Point on St. Mary's River) (24 hr. service)	Sault Ste. Marie
* Sturgeon Channel (Lake of the Woods) (S) (May 15-Oct. 31 daily)	Rainy River
Sudbury (Ramsay Lake) (9 am-5 pm daily)	Sudbury
* Toronto Island (Toronto Harbour) (8 am-12 mn daily)	Toronto
Warton (9 am-5 pm, Mon. -Fri. & as required)	Owen Sound
* Windsor (Detroit River) (9 am-5 pm, Mon. -Fri.)	Windsor

QUEBEC

Baie Comeau (Manicouagan River) (8 am-5 pm, Mon. -Fri.)	Baie Comeau
* Brompton Lake (9 am-5 pm, Mon. -Fri.)	Sherbrooke
* Estcourt (Lake Pohenegamook) (8 am-5 pm daily)	Estcourt
* Lac a la Tortue (9 am-5 pm, Mon. -Fri.)	Shawinigan
* Lac Megantic (9 am-5 pm, Mon. -Fri.)	Lac Megantic
Lac St. Augustin (8 am-12 mn daily)	Quebec
* Lake Pohenegamook (8 am-5 pm daily)	Estcourt
Lake Rapide (8 am-5 pm, Mon. -Fri.)	Sept Isles
Manicouagan River (9 am-5 pm, Mon. -Fri.)	Baie Comeau
* Megantic (Lac Megantic) (9 am-5 pm, Mon. -Fri.)	Lac Megantic
* Quebec - See Lac St. Augustin	
Rimouski (St. Lawrence River) (9 am-5 pm, Mon. -Fri.)	Rimouski
Sept Isles (Lake Rapide) (8 am-5 pm, Mon. -Fri.)	Sept Isles
* Sherbrooke (Brompton Lake) (9 am-5 pm, Mon. -Fri.)	Sherbrooke

NEW BRUNSWICK

* Campbellton (Restigouche River at Cross Point) (9 am-5 pm, Mon. -Fri.)	Campbellton
Fredericton (Saint John River) (as required)	Fredericton
St. Leonard (Saint John River) (as required)	St. Leonard

NOVA SCOTIA

* Sydney (Sydney Harbour) (as required)	Sydney
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WATER AERODROMES

NAME OF AERODROME
OR LANDING AREA

CUSTOMS OFFICE

PRINCE EDWARD ISLAND

* Charlottetown (Charlottetown Harbour) (9 am-5 pm, Mon. -Fri.)

Charlottetown

NORTHWEST TERRITORIES

Inuvik (MacKenzie River) (as required)

Inuvik (RCMP)

YUKON

Dawson (Yukon River) (as required)

Dawson

Old Crow River (as required)

Dawson

Whitehorse (Schwatsk Lake on Yukon River) (as required)

Whitehorse

INFORMATION CIRCULAR



General

0/21/69
20th October

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 2

IN-FLIGHT INCIDENT REPORTS

(Amending the Section In-Flight Incident Reports in
0/30/64 or in 0/7/69 as applicable.)

The co-operation of all pilots is requested in reporting observed incidents which appear to involve non-compliance with current regulations. In so doing, pilots are further requested to ensure that sufficient information is provided to permit effective investigation and subsequent prevention of similar incidents.

The procedure for reporting in-flight incidents is set out below with a suggested format, and a sample verbal report to be used in the air, in order that the essential information may be provided.

- (1) The report is to be made by radio or other means as soon as possible to the appropriate ATC centre, in the following form:
 - (a) Incident Report
 - (b) Name of person reporting incident
 - (c) Type and identification of reporting aircraft
 - (d) Position, Altitude, Flight condition of reporting aircraft
 - (e) Date and time of incident (Greenwich Mean Time)
 - (f) Location of incident - include distance and direction from known fix
 - (g) Altitude of reported aircraft
 - (h) Weather vicinity of incident
 - (i) Type, markings and other details of reported aircraft
 - (j) Details of incident including proximity, manoeuvre, etc.

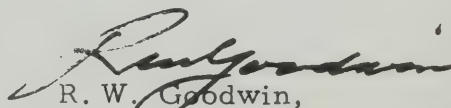
TO HAVE MAILING ADDRESS CHANGED PRINT NEW ADDRESS ON THE ENVELOPE IN WHICH THIS CIRCULAR WAS RECEIVED AND RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

RETURN TO RECORDS MANAGER, DEPARTMENT OF TRANSPORT, OTTAWA. (POSTAGE FREE IF MAILED IN CANADA).

Sample of Verbal Report

- (a) Incident Report
 - (b) John Doe
 - (c) Beechcraft CF-XYZ
 - (d) 3 miles east of Stirling NDB 6000 feet ASL between layers
 - (e) 10th March, 1912 GMT
 - (f) 10 miles east of Stirling NDB
 - (g) 6000 feet ASL
 - (h) 3500 feet broken visibility 3 miles light snow
 - (i) Piper CF-ABC, Yellow and Red
 - (j) CF-XYZ enroute Ottawa to Toronto encountered Piper CF-ABC approaching head on 10 miles east of Stirling NDB. Evasive action required to avoid collision.
- (2) Details of the report are to be confirmed by the pilot by collect telegram to the nearest Regional Director, Air Services immediately after landing - the telegram to be in the same form as the sample verbal report.
- (3) A full written narrative report amplifying the telegraphic report is to be made by the pilot to the Regional Director, Air Services within seven days.
- (4) Where an incident occurs within twenty-five miles of the next point of intended landing, the initial report may be made by telephone if circumstances make it inconvenient to report immediately by radio. However, the telegraphic and written reports will still be required.

Any delay in reporting of incidents may seriously hamper subsequent investigation. Pilots involved may therefore expect to be interviewed as soon as practicable after the written narrative has been received by the Regional Director.



R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Radio

0/22/69
27th October


DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 1

The following are pen-and-ink revisions to Information Circular 0/11/67.

- Page 1 - Under SECTION 1 NAVIGATIONAL AIDS, delete ILS Glide Path Modulation and the page number reference.
- Page 2 - / VOR Test Facilities - OMNITEST (VOT), last paragraph is to read:
"Notification of the commissioning of these test facilities at each location will be made by Class I NOTAM at the appropriate time and commissioned VOT will be published in relevant aeronautical information publications."
- Delete all reference to ILS GLIDE PATH MODULATION PERCENTAGE.
- Page 4 - Call Procedures - Radio Telephone, Line 25, change (radio range and VHF OMNI range if installed) to read (L/MFR, NDB and VOR if installed).
- Lines 5 and 6 from the bottom of the page for Ottawa and Montreal, change "Low Frequency Range" to read in each case "NDB".
- Page 6 - Change "114.8" to read "114.8 and 115.7".
- Change "121.6" to read "123.1".
- Delete marginal note (see)
(Note 6)
- Page 7 - As applicable to 122.2 under Facility column, lines 6, 7 and 8, change "Radio Ranges" to read "Aeradio Stations" and "Radar Advisory" to read "DEWLine Radar Advisory".
- Change "123.10 through 123.55" to read "123.2 through 123.55".
- Delete Note 6 in its entirety.
- Pages 9 and 10 / - Line 4 and fourth last line respectively; change "ICAO DOC 7181 COM/546 - Radiotelephone Procedures" to read "ICAO Annex 10 Vol. II - Communication Procedures".


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Airmanship

0/23/69
31st October

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 5

MEDICAL FACTS FOR PILOTS

(Superseding the Item "Medication and Flying" of Information Circular 0/2/69 or 0/9/66 as applicable, and the Item "Caution to Flight Crew Personnel" of the Information Circular entitled Licences and Endorsements previously numbered 0/21/64).

With acknowledgement to the Federal Aviation Administration of the United States.

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MEDICAL FACTS FOR PILOTS

INTRODUCTION

Just as your aircraft is required to undergo regular checks and maintenance, you are also required to undergo regular medical examinations to ensure your fitness to fly. The physical standards you are required to meet are minimum standards. You do not have to be a superman to fly. Many defects can be compensated for, as, for example, wearing glasses for visual defects. You may be required to demonstrate by a medical flight test that you can compensate for any other defects of potential significance to flight safety.

It should be recalled that humans are essentially earth bound creatures. However if we are aware of certain aeromedical factors, and pay attention to these, we can leave the earth and fly safely. What follows will not be one hard comprehensive lesson in aviation medicine, but will point out the more important factors with which you should be familiar prior to flying.

Modern industry's record in providing reliable equipment is very good. When the pilot enters the aircraft, he becomes an integral part of the man-machine system. He is just as essential to a successful flight as the control surfaces. To ignore the pilot in preflight planning would be as senseless as failing to inspect the integrity of the control surfaces of any other vital part of the machine. The pilot himself has the sole responsibility for determining his reliability prior to entering the cockpit for flight.

I. General Health

While piloting an aircraft, an individual should be free of conditions which are harmful to alertness, ability to make correct decisions, and rapid reaction times. Persons with conditions which are apt to produce sudden incapacitation, such as epilepsy, serious heart trouble, uncontrolled diabetes mellitus or diabetes mellitus requiring hypoglycemic agents, and certain other conditions hazardous to flight, cannot be medically certified according to the Physical Standards For Civil Aviation Personnel Licensing. Conditions such as acute infections, anemias, and peptic ulcers, are temporarily disqualifying. Consult your Aviation Medical Examiner when in doubt about any aspect of your health status, just as you would consult a licensed aviation mechanic when in doubt about the engine status.

II. Specific Aeromedical Factors

A. Fatigue:

Fatigue generally slows reaction times and causes foolish errors due to inattention. In addition to the most common cause of fatigue, insufficient rest and loss of sleep, the pressures of business, financial worries and family problems, can be important contributing factors. If your fatigue is marked prior to a given flight, don't fly. To prevent fatigue effects during long flights, keep active with respect to making ground checks, radio-navigation position plotting, and remaining mentally active.

B. Hypoxia:

Hypoxia in simple terms is a lack of sufficient oxygen to keep the brain and other body tissues functioning properly. Wide individual variation occurs with respect to susceptibility to hypoxia. In addition to progressively insufficient oxygen at higher altitudes, anything interfering with the blood's ability to carry oxygen can contribute to hypoxia (anemias, carbon monoxide, and certain drugs). Also, alcohol and various drugs decrease the brain's tolerance to hypoxia.

Your body has no built in alarm system to let you know when you are not getting enough oxygen. It is impossible to predict when or where hypoxia will occur during a given flight, or how it will manifest itself.

A major early symptom of hypoxia is an increased sense of well-being (referred to as euphoria). This progresses to slowed reactions, impaired thinking ability, unusual fatigue, and a dull headache feeling.

The symptoms are slow but progressive, insidious in onset, and are most marked at altitudes starting above ten thousand feet. Night vision, however, can be impaired starting at

altitudes lower than ten thousand feet. Heavy smokers may also experience early symptoms of hypoxia at altitudes lower than is so with nonsmokers.

If you observe the general rule of not flying above ten thousand feet without supplemental oxygen, you will not get into trouble.

C. Alcohol:

Do not fly while under the influence of alcohol. An excellent rule is to allow twenty four hours between the last drink and take-off time. Even small amounts of alcohol in the system can adversely affect judgement and decision making abilities.

Relatively small amounts of alcohol significantly decrease a pilot's tolerance to hypoxia (Oxygen lack). At 6,000 feet the effect of one drink is that of two drinks at sea level. Even at sea level alcohol impairs judgement and reaction time. Therefore, ALCOHOL AND FLYING DO NOT MIX.

Remember that your body metabolizes alcohol at a fixed rate, and no amount of coffee or medication will alter this rate.

By all means, do not fly with a hangover, or a "masked hangover" (symptoms suppressed by aspirin or other medication).

D. Drugs:

Self-medication or taking medicine in any form when you are flying can be extremely hazardous. Even simple home or over-the-counter remedies and drugs such as aspirin, antihistamines, cold tablets, cough mixtures, laxatives, tranquillizers and appetite suppressors, may seriously impair the judgement and coordination needed while flying. The safest rule is to take no medicine while flying, except on the advice of your Aviation Medical Examiner. It should also be remembered that the condition for which the drug is required, may of itself be very hazardous to flying, even when the symptoms are suppressed by the drug.

Certain specific drugs which have been associated with aircraft accidents in the recent past are: Antihistamines (widely prescribed for hayfever and other allergies); Tranquillizers (prescribed for nervous conditions, hypertension, and other conditions); Reducing Drugs (amphetamines and other appetite suppressing drugs can produce sensations of well-being which have an adverse affect on judgement); Barbiturates, Nerve tonics or pills (prescribed for digestive and other disorders, barbiturates produce a marked suppression on mental alertness).

Lastly remember that following local and general dental and other anaesthetics a period of at least 48 hours should be spent on the ground and if any doubt remains concerning the right time to resume flying then seek appropriate medical advice.

E. Vertigo:

The word itself is hard to define. To earth bound individuals it usually means dizziness or swimming of the head. To a pilot it means, in simple terms, that he doesn't know which end is up. In fact, vertigo during flight can have fatal consequences.

On the ground we know which way is up by the combined use of three senses:

1. Vision - We can see where we are in relation to fixed objects.
2. Pressure - Gravitational pull on muscles and joints tells us which way is down.
3. Special Parts In Our Inner Ear - The Otoliths tell us which way is down by gravitational pull.

It should be noted that accelerations of the body are detected by the fluid in the semi-circular canals of the inner ear, and this tells us when we change position. However, in the absence of a visual reference, such as flying into a cloud or overcast, the accelerations can be confusing, especially since their forces can be misinterpreted as gravitational pulls on the muscles and otoliths. The result is often disorientation and vertigo (or dizziness).

All pilots should have an instructor pilot produce manoeuvres which will produce the sensation of vertigo. Once experienced, later unanticipated incidents of vertigo can be overcome.

Closing the eyes for a second or two may help, as will watching the flight instruments, believing them, and controlling the airplane in accordance with the information presented on the instruments.

Pilots are susceptible to experiencing vertigo at night, and in any flight condition when outside visibility is reduced to the point that the horizon is obscured. An additional type of vertigo is known as flicker vertigo. Light, flickering at certain frequencies, from four to twenty times per second, can produce unpleasant and dangerous reactions in some persons. These reactions may include nausea, dizziness, unconsciousness, or even reactions similar to an epileptic fit. In a single engine propeller airplane, heading into the sun, the propeller may cut the sun to give this flashing effect, particularly during landings when the engine is throttled back. These undesirable effects may be avoided by not staring directly through the prop for more than a moment, and by making frequent but small changes in RPM. The flickering light traversing helicopter blades has been known to cause this difficulty, as has the bounce-back from rotating beacons on aircraft which have penetrated clouds. If the beacon is bothersome, shut it off during these periods.

F. Carbon Monoxide:

Carbon monoxide is a colorless, odorless, tasteless product of an internal combustion engine and is always present in exhaust fumes. Even minute quantities of carbon monoxide breathed over a long period of time, may lead to dire consequences.

For biochemical reasons, carbon monoxide has a greater ability to combine with the hemoglobin of the blood than oxygen. Furthermore, once carbon monoxide is absorbed in the blood, it sticks "like glue" to the hemoglobin and actually prevents the oxygen from attaching to the hemoglobin.

Most heaters in light aircraft work by air flowing over the manifold. So if you have to use the heater, be wary if you smell exhaust fumes. The onset of symptoms is insidious, with "blurred thinking", a possible feeling of uneasiness, and subsequent dizziness. Later headache occurs. Immediately shut off the heater, open the air ventilators, descend to lower altitudes, and land at the nearest airfield. Consult an Aviation Medical Examiner. It may take several days to fully recover and clear the body of the carbon monoxide.

G. Vision:

On the ground, reduced or impaired vision can sometimes be dangerous depending on where you are and what you are doing. In flying it is always dangerous.

On the ground or in the air, a number of factors such as hypoxia, carbon monoxide, alcohol, drugs, fatigue, or even bright sunlight can affect your vision. In the air these affects are critical.

Some good specific rules are: Make use of sun glasses on bright days to avoid eye fatigue; During night flights, use red covers on the flashlights to avoid destroying any dark adaptation; Remember that drugs, alcohol, heavy smoking and the other factors mentioned above, have early effects on visual acuity.

H. Middle Ear Discomfort or Pain:

Certain persons (whether pilots or passengers) have difficulty balancing the air loads on the ear drum while descending. This is particularly troublesome if a head cold or throat inflammation keeps the eustachian tube from opening properly. If this trouble occurs during descent, try swallowing, yawning, or holding the nose and mouth shut and forcibly exhaling. If no relief occurs, climb back up a few thousand feet to relieve the pressure on the outer drum. Then descend again, using these measures. A more gradual descent may be tried, and it may be necessary to go through several climbs and descents to "stair step" down. If a nasal inhaler is available, it may afford relief. If trouble persists several hours after landing, consult your Aviation Medical Examiner.

Note: If you find yourself airborne with a head cold, you may possibly avoid trouble by using an inhaler kept as part of the flight kit.

I. Panic:

The development of panic in inexperienced pilots is a process which can get into a vicious circle with itself and lead to unwise and precipitous actions. If lost, or in some other predicament, forcibly take stock of yourself, and do not allow panic to mushroom. Panic can be controlled.

Remember, Prevent Panic to Think Straight. Fear is a normal protective reaction, and occurs in normal individuals. Fear progression to panic, is an abnormal development.

J. SCUBA Diving:

You may use your plane to fly to a sea resort or lake for a day's SCUBA diving, and then fly home, all within a few hours time. This can be dangerous, particularly if you have been diving to depths for any length of time.

Under the increased pressure of the water, excess nitrogen is absorbed into your system. If sufficient time has not lapsed prior to take-off for your system to rid itself of this excess gas, you may experience the bends at altitudes under 10,000 feet where most light planes fly.

K. Blood Donations:

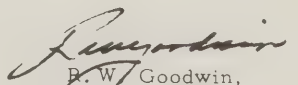
Mention should be made of the fact that blood donation and flying do not mix. Disturbance to the circulation following blood donations takes several weeks to return to normal and although effects are slight whilst at ground level there are risks when flying during this period. It is recommended that pilots do not volunteer as blood donors when actively flying but if blood has been given, an appropriate medical source should be consulted before returning to flying.

L. Hyperventilation:

Hyperventilation, or over breathing, is a disturbance of respiration that may occur in individuals as a result of emotional tension or anxiety. Under conditions of emotional stress, fright or pain, breathing rate may increase, causing increase lung ventilation, although the carbon dioxide output of the body cells does not increase. As a result, carbon dioxide is "washed out" of the blood. The most common symptoms of hyperventilation are: dizziness; hot and cold sensations; tingling of the hands, legs and feet; muscle spasms, nausea sleepiness, and finally unconsciousness

Should symptoms occur which cannot definitely be identified as either hypoxia or hyperventilation, the following steps should be taken:

1. Check your oxygen equipment and put the regulator auto-mix level on 100% oxygen (demand or pressure demand system). Continuous flow-check oxygen supply and flow mechanism.
2. After three or four deep breaths of oxygen, the symptoms should improve markedly, if the condition was hypoxia (recovery from hypoxia is rapid).
3. If the symptoms persist, consciously slow your breathing rate until symptoms clear and then resume normal breathing rate.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Summary

0/1/70
1st January

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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INFORMATION CIRCULARS IN EFFECT - 1st JANUARY, 1970

1959	1965	1966	1967	1968	1969	1970
0/14/59	0/2/65	0/6/66	0/9/67	0/4/68	0/2/69	0/15/69
	0/5/65	0/7/66	0/11/67	0/10/68	0/3/69	0/16/69
1964	0/7/65	0/8/66		0/11/68	0/7/69	0/17/69
	0/13/65	0/12/66		0/12/68	0/8/69	0/18/69
0/22/64	0/16/65	0/13/66			0/9/69	0/19/69
0/27/64		0/26/66			0/11/69	0/20/69
0/30/64					0/12/69	0/21/69
					0/13/69	0/22/69
						0/23/69

SPECIAL NOTICES

NOTE 1

The following Information Circulars, although still valid, have been amalgamated under one cover "AIRMANSHIP" (0/2/69).

0/27/64, 0/2/65, 0/7/65, 0/6/66, 0/7/66, 0/8/66, 0/9/66, 0/13/66, 0/26/66.

NOTE 2

The following Information Circulars, although still valid, have been amalgamated under one cover "GENERAL" (0/7/69).

0/14/59, 0/30/64, 0/13/65, 0/16/65, 0/12/66, 0/10/68, 0/11/68.

NOTE 3

Automatic issue of the Information Circulars listed in "AERONAUTICAL INFORMATION SERVICE" (0/11/69) has been discontinued, but as stated in that Circular, they are available on request, until such time as the Handbooks are published.

The following is a list of those Information Circulars referred to in this note:

0/22/63	to be included in Personnel Licensing Handbook
0/21/64	to be included in Personnel Licensing Handbook
0/3/66	to be included in Personnel Licensing Handbook
0/10/66	to be included in Personnel Licensing Handbook
0/16/66	to be included in Personnel Licensing Handbook
0/17/66	to be included in Personnel Licensing Handbook
0/18/66	to be included in Personnel Licensing Handbook
0/23/66	to be included in Personnel Licensing Handbook
0/10/67	to be included in Personnel Licensing Handbook
0/3/68	to be included in Personnel Licensing Handbook
0/33/64	to be included in Aircraft Licensing Handbook
0/5/69	to be included in Aircraft Licensing Handbook
0/10/69	to be included in Aircraft Licensing Handbook
0/6/65	to be included in Commercial Operations Handbook
0/11/66	to be included in Medical Information Handbook
0/2/68	to be included in Medical Information Handbook
0/6/67	to be included in Fees and Charges Handbook
0/8/68	to be included in Fees and Charges Handbook

<u>NOTE 4</u>	0/9/66	superseded by 0/23/69
	0/14/69	superseded by 0/1/70
	0/5/68	superseded by 0/20/69
	0/6/68	published in Canada Air Pilot
	0/4/69	superseded by NOTAM 26/69

AERODROMES

0/4/68	SECTION 1	LAND, WATER, ICE AND HELIPORTS Definitions Private Buoy Regulations Physical Characteristics of Aerodromes Visual Ground Aids (Day) Visual Ground Aids (Night) Use of Airport Lighting Equipment Touchdown Zone and Centreline Lighting Runway Numbering Visual Approach Slope Indicator (VASIS) Heliports
	SECTION 2	CONDITIONS FOR USE OF CERTAIN CIVIL AND MILITARY AERODROMES (Amended by 0/18/69) Use of Aerodromes by Aircraft Engaged in International Air Carrier Operations Use of Department of National Defence Aerodromes by Civil Aircraft Use of Distant Early Warning (DEW) Line Aerodromes Use of Helicopter Landing Sites - Ottawa
0/18/69	Amending Information Circular 0/4/68	
0/19/69	SPECIAL PROCEDURES TO AVOID INJURY TO PERSONS SWIMMING AND BOATING	

AERONAUTICAL INFORMATION SERVICES

0/9/67	SECTION 1	AERONAUTICAL INFORMATION SERVICES AVAILABLE IN CANADA
	SECTION 2	DISTRIBUTION OF AERONAUTICAL PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM
	SECTION 3	CONTENTS OF AERONAUTICAL PUBLICATIONS, INFORMATION CIRCULARS AND NOTAM
	SECTION 4	AERONAUTICAL CHARTS
	SECTION 5	SOURCES OF SUPPLY AND PRICES - CANADIAN AND FOREIGN PUBLICATIONS AND CHARTS
0/11/69	CIVIL AVIATION HANDBOOKS	

AIR TRAFFIC CONTROL

0/17/69	NON-RADAR LATERAL SEPARATION OF IFR FLIGHTS (Supersedes NOTAM 8/66)
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AIRCRAFT GENERAL

0/22/64	CARRIAGE OF EXPLOSIVES AND OTHER DANGEROUS ARTICLES AND SUBSTANCES ON BOARD AIRCRAFT	
0/5/65	AIRCRAFT GENERAL	
	SECTION 1	EQUIPMENT Emergency Equipment - Sparsely Settled Areas Life Preserving Equipment - Over Water Operations Hand Fire Extinguishers for Use in Aircraft Anti-Collision Lights Use of High Visibility Paint on Aircraft Emergency Exit Lighting Lights - Aircraft Aircraft Compasses Flying Control Locks Fuel Selectors - Beechcraft 18 Aircraft

- SECTION 2 OPERATING REQUIREMENTS
Operating Requirements for Agricultural Aircraft
Stall Characteristics of the Douglas DC-3
Consolidated Canso Aircraft
Aircraft Fuel
Fuel Handling
Use of Alcohol in Fuel Systems
Aircraft Loading Computations - Weight and Balance Report - Loading Guide
Average Passenger Weights
Identification of Aircraft
Regulations Concerning Water for Drinking and Culinary Purposes on Aircraft
Quarantine and Sanitary Measures - Communicable Diseases
- SECTION 3 MISCELLANEOUS
Canadian Airworthiness Council
Introduction of Journey Log Books and Aircraft Technical Logs
Aircraft and Pilot Log Books - Time Keeping
Servicing and Inspection Private Aircraft

AIRMANSHIP

0/2/69 SEE NOTE 1 OF THIS CIRCULAR

- 0/27/64 SECTION 1 TAKE-OFF AND LANDING
Pilot Vital Action Check Lists
Flying Operations in Mountainous Regions
Use of Highways for Landing and Taking-Off of Aircraft
The Effect of Temperature and Altitude on Aircraft Performance
Doors Opening in Flight
Cross-Wind Landing Limitations - Light Aircraft
Landing Technique and Safety
Landing Seaplanes Under Glassy Water Conditions or Skiplanes on Unbroken Snow
White-Out
Winter Operations - Take-Off
Safety Precautions to Prevent Misreading Altimeters (Amended by 0/8/66)
Communications Facilities
Reporting of Runway Visual Range
- SECTION 2 ENROUTE HAZARDS
Domestic Pilot Reports - "PIREPS"
Use of Railroads, Roads, Rivers, Powerlines, Pipelines, etc. as Navigational Aids
Restricted Flight Visibility - Control Zones
Visual Look-Out - Vicinity of Airports
Flight in Rain
Turbulence in the Wake of Aircraft (Amended by 0/7/66)
Ice Falling from Aircraft
Dry Ice - Safety Precautions
Potential Hazard - Portable Combustion Heaters
High Altitude Flight in Aircraft with Non-Pressurized Cabins
- SECTION 3 SPECIAL OPERATING PROCEDURES
Winter Operations - Wheel-Equipped Light Aircraft
Use of Seaplanes on Snow Surfaces
Single-Engined Aircraft Operating in Northern Canada
Operating Requirements for Seaplanes with External Loads
Operating Requirements for Civil Aircraft Employed on Parachute Jumping Activities within Canada
Control of Flight Tests
Air Shows
Intentional Spinning Practice
Simulated Engine Failure
Health Hazards Associated with Crop Dusting and Spraying Operations

0/12/69 THE EFFECT OF ICING ON PISTON ENGINES IN LIGHT AIRCRAFT

0/2/65 MISUSE OF RADAR VECTORS - HAZARD TO FLIGHT

0/7/65 TRANS-OCEANIC FLIGHT - SINGLE-ENGINE AIRCRAFT
Pilot Qualifications
Aircraft Airworthiness
Life Saving Equipment
Aircraft Instruments and Equipment
Aircraft Radio Communication Equipment
Aircraft Navigation Equipment

0/6/66 PROCEDURES FOR USE OF RUNWAY VISUAL RANGE (Amended by 0/26/66)

0/7/66 TURBULENCE IN THE WAKE OF AIRCRAFT

0/8/66 MAJOR "ERRORS" OF THE PRESSURE ALTIMETER

0/13/66 AMENDS PAGE 2 AND PAGE 18 OF INFORMATION CIRCULAR 0/27/64

0/26/66 PROCEDURES FOR USE OF RUNWAY VISUAL RANGE

0/23/69 MEDICAL FACTS FOR PILOTS

CUSTOMS AND IMMIGRATION

0/20/69 CUSTOMS CLEARANCE PROCEDURES AND AUTHORIZED CANADIAN AERODROMES
OF ENTRY AND EXIT
Customs Notification Requirements
Special Service and Transportation Charges
Formalities on Landing
Formalities on Departure
Licensing Requirements for Visiting Pilots
Canadian and United States "ADCUS" Airports
Authorized Canadian Customs Airports and Aerodromes of Entry and Exit

GENERAL

0/7/69 SEE NOTE 2 OF THIS CIRCULAR

0/14/59 AVOIDANCE BY AIRCRAFT OF DOMINION RADIO ASTROPHYSICAL OBSERVATORY
- PENTICTON, B.C.

0/30/64 GENERAL (Amended by 0/10/68)

SECTION 1 CONSERVATION LAWS
Game Regulations - Province of Manitoba.
Fur Farms
Caribou Herds
Forest Fires
Fire Detection - Northern Areas
Travel Permit Regulations - Provinces of British Columbia, Saskatchewan,
Ontario, Quebec and Nova Scotia

SECTION 2 PROTECTION OF WILD LIFE
GROUND HAZARDS
Potential Hazard - Helicopter Rotor Blades
Use of Airborne Radar
Safety Precautions to Prevent Injury to Persons on the Ground
Safety Precautions - Starting and Running Aircraft Engines

SECTION 3 SECURITY CONTROL
Interception of Civil Aircraft
Information Concerning the Conduct of ESCAT Rules (Amended by 0/12/66)
Vital Intelligence Sightings - CIRVIS Reporting Procedures

SECTION 4 MISCELLANEOUS
In-Flight Incident Reports (Amended by 0/21/69)
Warning to Pilots Flying to the United States
Issue and Dissemination of SIGMET Information
Marshalling Signals - Aircraft
Movement of Mail to Isolated Stations in the Canadian North
Distribution of Aircraft Reports


0/13/65 FINDING THE SUN'S TRUE BEARING (SIMPLIFIED METHOD)
0/16/65 CONSERVATION LAWS
California Bighorn Sheep - British Columbia
0/12/66 INFORMATION CONCERNING THE CONDUCT OF SCATANA TESTS
0/10/68 AMENDS INFORMATION CIRCULAR 0/30/64
0/11/68 REPORTING OF FIREBALL AND METEORITE OBSERVATIONS
0/8/69 UNITED NATIONS RHODESIA REGULATIONS
0/15/69 RULES OF THUMB TO ASSIST IN AVOIDING OR MINIMIZING ENCOUNTERS WITH
CLEAR AIR TURBULENCE
0/16/69 VITAL INTELLIGENCE SIGHTING - CIRVIS REPORTING PROCEDURES
0/21/69 IN-FLIGHT INCIDENT REPORTS

RADIO

0/11/67 NAVIGATION AIDS AND AIR/GROUND COMMUNICATIONS
SECTION 1 NAVIGATIONAL AIDS
VOR Test Facilities - Omnitest (VOT)
ILS Identifiers
ILS Glide Path Modulation
ILS Localizer - Interference
Aircraft Navigational Equipment - Interference
SECTION 2 AIR/GROUND COMMUNICATIONS
Calling Procedures - Radio Telephone
Phonetic Alphabet
VHF Aeronautical Frequency Plan
Communications Principles - Canadian Trans-Atlantic Operations
Use of Frequency 5680 kHz
Use of Frequency 122.9 MHz
Addressing of Messages Originating in Aircraft
0/3/69 TACAN/VOR - ILS FREQUENCY PAIRING
0/13/69 TRANSCRIBED WEATHER BROADCASTS
0/22/69 AMENDS INFORMATION CIRCULAR 0/11/67

SEARCH AND RESCUE

0/12/68 SEARCH AND RESCUE
The Canadian Forces Search and Rescue Service
Emergency Locator Beacons
Aircraft Marking
Ground Air Visual Signal Code
Search and Rescue - Standard Procedure for Pilots
Radar Assistance to Aircraft
APPENDIX I Interception Signals
APPENDIX II MAP - Canadian Forces Search and Rescue Service
0/9/69 AIRBORNE EMERGENCY PROCEDURES


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



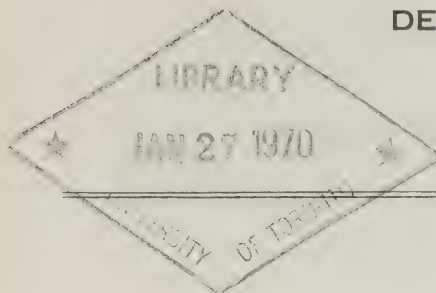
Aerodromes

0/2/70
15th January

DEPARTMENT OF TRANSPORT

AIR SERVICES
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Page 1 of 1



USE OF JAMES BRAKE DECELEROMETER

In order to provide a uniform method of determining the coefficient of friction of runways covered in whole or in part with ice or snow, the Department of Transport has acquired a number of James Brake Decelerometers for use at selected airports throughout Canada. The equipment is not suitable for use if there is water or slush on the runway and will therefore not be used under these circumstances.

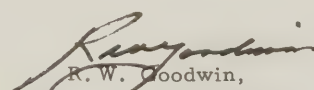
The decelerometer is calibrated to indicate the rate of deceleration in feet per second per second. The indicator scale reads from 0 to 32. A reading of "0" indicates absolutely no braking action, whereas, a reading of "30" would indicate a high rate of deceleration, such as would be expected on a dry clean runway. These readings are referred to as James Brake Index Numbers (JBI).

Measurements of the rate of deceleration using the James Brake Decelerometer will be made at 1000' intervals at a distance of 30' on each side of the runway centreline over the entire runway length. The runway will be divided into three sections, A, B, C, with each section representing one-third of the available runway length. The JBI recorded for each section will be averaged to the nearest whole number. In all cases, the "A" reading will be that for the sector applicable to the low number end of the runway e.g. for Runway 07-25, the "A" reading will be for the sector at the 07 end and the "C" reading will be for the sector at the 25 end.

JBI reports will be appended to meteorological weather reports (hourly sequences and specials) as series "B" NOTAM and by voice advisory from the Aeradio Station at uncontrolled airports or the control tower at controlled airports. JBI reports will be as follows: Runway number, temperature, James Brake Index (JBI) runway sector averages and time. An example would be: Runway 08, 27, JBI, A27, B25, C28 0800Z.

While there are many factors, e.g. type of aircraft, runway length available, approach speed, tire pressure, under-carriage configuration etc., which have to be taken into account in relating the JBI reading to aircraft braking capability, the following scale is provided as a guide to aircraft operators: 0 - 9 Unsafe, 10 - 17 Poor, 18 - 21 Fair, 22 - 24 Good, 25 - 32 Excellent.

Notwithstanding the foregoing, the final decision as to the suitability of a runway for a particular operation rests with the Captain of the aircraft.


R. W. Goodwin,
Director, Civil Aviation.



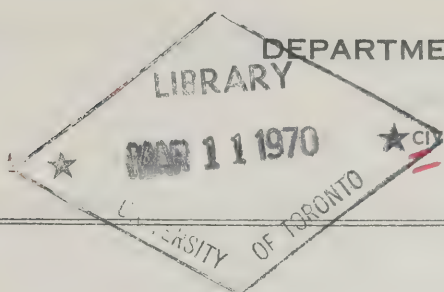
INFORMATION CIRCULAR



GENERAL

0/3/70

9th February



DEPARTMENT OF TRANSPORT

AIR SERVICES

CIVIL AVIATION BRANCH

Page 1 of 2

TRANS CANADA (McKEE) TROPHY

NOMINATION INFORMATION AND FORMAT

The Trans Canada (McKee) Trophy which was presented by the late James Dalzell McKee, as a memorial of the first trans-continental seaplane flight made in September of 1926, is, in theory, to be awarded each year for the encouragement of Canadian aviation in accordance with the principles outlined in the agreement and subject to the conditions of award as approved by the Minister of National Defence, the official trustee of the award.

The Trophy is awarded on the basis of excellence in the field of flying operations and the "CONDITIONS OF AWARD" are as set out below:

- (a) The recipient shall be one who is domiciled in Canada and who is identified with Canadian flying either military or civil.
- (b) Qualifications as aircrew is a prior claim to consideration, but lack of such qualification does not exclude others from consideration providing they qualify in all other respects as included in these Conditions of Award.
- (c) Contribution to operations which advance the cause of aviation shall receive consideration over exploits of a dangerous nature serving no useful purpose.
- (d) Continuous performance throughout the year is worthy of consideration, however, the trophy is awarded primarily for recognition of an outstanding contribution or spectacular achievement in the field of Air Operations.
- (e) Pioneering of new areas of Aircraft Operations is to receive special consideration.

Nominations for the Trans Canada (McKee) Trophy are invited from all segments of Canadian Aviation, such as commercial and private operators, Government departments using aircraft, and the military. Also, any person who, in his opinion, has performed meritorious service, may forward his own name for consideration. Nominations will be solicited annually; however, if in the opinion of the Award Committee and with the agreement of the Minister of National Defence, the contributions of the nominees are not consistent with the stature and intent of the Award, no selection will be made for that year.

NOMINATION FORMAT

The following format is suggested for purposes of standardization of submissions and to ensure that each nominee receives full consideration.

Nominee - Name in full.

Historical Facts - Include birthplace, short resumé of education and training plus history of employment.

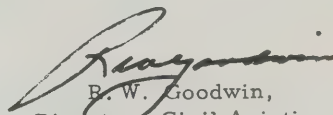
Association with Aircraft Operations - Provide a resumé of the nominee's association with aircraft operations.

Details of Contribution or Achievement - Detailed description of contribution or operational achievement which is to be of primary consideration by the Award Committee. Additional operational contributions may be provided as supporting information.

Pioneering - Examples of pioneering activities should be fully authenticated and supported with detailed description of the activity.

All organizations operating aircraft in Canada as well as interested individuals are urged to give this matter careful consideration and submit recommendations, thus ensuring that those taking an active part in the advancement of aviation in Canada are not overlooked.

Nominations for 1969 are to be forwarded directly to the Chairman, Trans Canada (McKee) Trophy Award Committee, Canadian Forces Headquarters, Department of National Defence, Ottawa, Ontario: Attention: DGOPSA, and are to be postmarked not later than April 1st, 1970.


B. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



RADIO

0/4/70
16th February

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

400 Hz AUDIO TONE ON NON-DIRECTIONAL BEACONS

The low frequency spectrum between 200 kHz and 415 kHz, used for aeronautical non-directional beacons has become congested in many areas of Canada to the point where it is almost impossible to establish further beacons without causing interference to existing facilities. Changing the audio tone emitted by a beacon from 1020 Hz to 400 Hz will alleviate the problem to a considerable extent. A 400 Hz tone will reduce the bandwidth of a frequency, thereby reducing interference and permitting more beacons to operate within a given spectrum. A 400 Hz tone is heard as a lower note; comparable to that of an ILS outer marker.

In order to evaluate the operational aspects of this change, beginning in April 1970, the Department of Transport will convert the following non-directional beacons to a 400 Hz tone.

ATLANTIC REGION

- Burtts
Pennfield
Botsford
Copper Lake
Pinehurst
St. Anthony

QUEBEC REGION

- Beauharnois
Vercheres
La Tuque
Roxton
St. Felix de Valois
St. Mathias

ONTARIO REGION

- Ash
Smith Falls
Kinburn
Powassan
Sturgeon Falls
Casselman

CENTRAL REGION

- Delta
- Broadview
- Lumsden
- Beechy
- Clear Lake
- La Salle

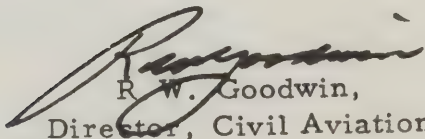
WESTERN REGION

- Cowley
- Crossfield
- Empress
- Pigeon
- Rocky Mountain House
- Standard

PACIFIC REGION

- Cloak
- Cultus
- Enderby
- Hope

It is proposed to operate the above mentioned beacons at 400 Hz for a period of evaluation and familiarization. Comments regarding their operation and/or effectiveness would be appreciated. Such comments may be directed to the Director, Civil Aviation Branch, Department of Transport, Ottawa 4, Ontario.


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Aeronautical Information
Services

0/5/70
16th March

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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REVISED SCHEDULE OF EFFECTIVE DATES FOR FLIGHT INFORMATION

With effect from April 2nd, 1970, Canadian Flight Information Publications previously issued to be effective at intervals of 35 days will be issued to be effective at intervals of 28 days. On that date and subsequently the issue of the following listed charts and publications will conform with the International Civil Aviation Organization schedule which is based upon a series of common effective dates for the establishment, withdrawal and significant changes to aeronautical facilities, services, and procedures.

The Flight Information Publications affected include:

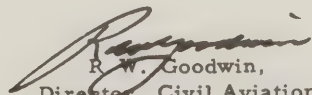
- (a) Radio Navigation Charts - ICAO (LE, HE, T and SID charts)
- (b) Designated Airspace Handbook (reissued every 56 days with one amendment after 28 days)

Military Publications:

- (a) Enroute Supplement (DND FLIP GPH205)
- (b) Terminal High Altitude Approach Charts (DND FLIP GPH201)

The series of common effective dates at intervals of 28 days during 1970 is listed below:

2 April	20 August
30 April	17 September
28 May	15 October
25 June	12 November
23 July	10 December


R. W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Aerodromes

0/6/70
23rd February

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

Page 1 of 1

USE OF JAMES BRAKE DECELEROMETER (Superseding Information Circular 0/2/70)

In order to provide a uniform method of determining the coefficient of friction of runways covered in whole or in part with ice or snow, the Department of Transport has acquired a number of James Brake Decelerometers for use at selected airports throughout Canada. The equipment is not suitable for use if there is water or slush on the runway and will therefore not be used under these circumstances.

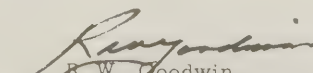
The decelerometer is calibrated to indicate the rate of deceleration in feet per second per second. The indicator scale reads from 0 to 32. A reading of "0" indicates absolutely no braking action, whereas, a reading of "30" would indicate a high rate of deceleration, such as would be expected on a dry clean runway. These readings are referred to as James Brake Index Numbers (JBI).

Measurements of the rate of deceleration using the James Brake Decelerometer will be made at 1000' intervals at a distance of 30' on each side of the runway centreline over the entire runway length. The runway will be divided into three sections, A, B, C, with each section representing one-third of the available runway length. The JBI recorded for each section will be averaged to the nearest whole number. In all cases, the "A" reading will be that for the sector applicable to the low number end of the runway e.g. for Runway 07-25, the "A" reading will be for the sector at the 07 end and the "C" reading will be for the sector at the 25 end.

JBI reports will be appended to meteorological weather reports (hourly sequences and specials) as series "B" NOTAM and by voice advisory from the Aeradio Station at uncontrolled airports or the control tower at controlled airports. JBI reports will be as follows: Runway number, temperature, James Brake Index (JBI) runway sector averages and time. An example would be: Runway 08, 27, JBI, A27, B25, C28 0800Z.

While there are many factors, e.g. type of aircraft, runway length available, approach speed, tire pressure, under-carriage configuration etc., which have to be taken into account in relating the JBI reading to aircraft braking capability, the following scale is provided as a guide to aircraft operators: 0 - 9 Nil to Very Poor, 10 - 17 Poor, 18 - 21 Fair, 22 - 24 Good, 25 - 32 Excellent.

Notwithstanding the foregoing, the final decision as to the suitability of a runway for a particular operation rests with the Captain of the aircraft.


R.W. Goodwin,
Director, Civil Aviation.

INFORMATION CIRCULAR



Airmanship

0/7/70
10th April

DEPARTMENT OF TRANSPORT

AIR SERVICES
CIVIL AVIATION BRANCH

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AIRMANSHIP

(Superseding the Item "Operating Requirements for Civil Aircraft Employed on Parachute Jumping Activities within Canada", in Information Circular 0/27/64 and 0/2/69, as applicable)

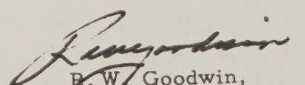
OPERATING REQUIREMENTS FOR CIVIL AIRCRAFT EMPLOYED ON PARACHUTE JUMPING ACTIVITIES WITHIN CANADA

The interest in the sport of parachute jumping within Canada, makes it essential that aircraft operators be aware of their responsibilities when engaged in flying parachutists up to jump height.

Aircraft operators participating in this sport should ensure that:

- (a) The parachute jump position in the aircraft is free of dual controls;
- (b) Aircraft exit facilities are provided that will permit a safe and clear exit for the parachutist and his equipment;
- (c) Static line jumps are not permitted without a crew member in addition to the pilot on board the aircraft in order to assist the parachutist or pilot in the event of an emergency;
- (d) No pilot should allow a parachutist to make or attempt to make a parachute descent into an area where such a descent may be deemed a hazard to persons or property on the ground or water; and
- (e) No pilot will permit, and no parachutist will attempt any type of parachute descent unless the said concerned parachutist is wearing a single harness dual parachute pack, having at least one main parachute and one reserve parachute, that are recognized as such.

It is strongly recommended that all pilots participating in this sport should be conversant with the information contained in the Basic Rules and Safety Regulations of the Canadian Sport Parachuting Association. These rules and regulations can be obtained by writing to the President, Canadian Sport Parachuting Association, 916 Friar Crescent, North Vancouver, B. C.


R. W. Goodwin,
Director, Civil Aviation.

